Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Sound Waves, Telephone Magazine and The Telephone

Vol. XVII | CHICAGO, SATURDAY, FEBRUARY 20, 1909 | No. 8

PUBLISHED EVERY SATURDAY BY THE

Telephony Publishing Company

Monadnock Block, Chicago

Telephone Harrison 2951

H. B. McMeal, President — F. S. Kenfield, 1st Vice-President
W. H. Graffis, 2d Vice-President — H. D. Fargo, Secretary-Treasurer

Edited by H. B. McMeal and Franklin H. Reed

The present publication comprises

Vol. 56	The Telephone	No. 8
Vol. 33	Telephone Magazine	No. 8
Vol. 19	American Telephone Journal	No. 8
Vol. 17	Sound Waves	No. 8
Vol. 17	Telephony	No. 8

TERMS OF SUBSCRIPTION:

United States, Cuba and Mexico.....per year, $3.00
Canada 4.00
Other Foreign Countries within the Postal Union..... 5.00

NOTICE TO ADVERTISERS

Changes of advertising copy should reach this office ten days in advance of date of issue. New advertisements accepted up to noon of Monday for the paper dated Saturday of the same week.

Copyright, 1909, by Telephony Publishing Company

Entered as second-class matter September 4, 1908, at the post office at Chicago, Ill., under act of March 3, 1879.

CHICAGO, SATURDAY, FEBRUARY 20, 1909.

CONTENTS.

Editorial 207
A Sound Financial Policy. By E. B. Fisher..... 209
The Deterioration of Lead Sheaths of Aerial and Underground Telephone Cables. By Thomas G. Spencer..... 213
The Development Study. By S. D. Levings 217
Letters on Practical Subjects..... 219
New Branch Exchange at Columbus, Ohio..... 220
The Telephone in the Courts. By A. H. McMillan.....222, 223
Practical Questions and Answers.....223, 224
Telephone News.....225, 226, 227, 228, 229, 230, 231
Telephone Patents. By Max W. Zabel..... 232
In the Manufacturing Field.....233, 234, 235
Condensed News Reports.....236, 237, 238

The Discrimination of California Law Against Small Companies of the State.

The people of the state of California, by the wisdom of their senate and assembly, have enacted a law providing that every franchise or privilege for erecting or laying telephone wires, except telephone lines doing an interstate business, shall be granted upon certain conditions set forth in the Act of March 22, 1905, and not otherwise. The Act goes on to provide certain conditions which are more or less onerous according to the circumstances of the particular case. As the Act is framed, it excludes from its operation the large companies, such as the Western Union Telegraph Company and the Pacific Telephone and Telegraph Company, and, in the picturesque slang of the present day, hands the small companies a lemon, or rather a whole basket of them. Because the large companies are engaged in interstate business, this Act allows them to either operate without a franchise from the local municipal body or under such a franchise as they wish. Any small company, just commencing business and starting to develop the resources of the community where it is organized, is placed at a disadvantage by this Act, which requires it to complete its work within three years from the granting of the franchise, to pay a 2½ per cent income tax, to set its poles within two feet from the fences and prohibits the use of certain kinds of poles.

Probably the excuse of the legislature for passing this Act and granting to the large companies the particular favor of being exempted from local regulation, would be that it had no power to require the company doing interstate business to secure a franchise. We do not believe this reason good, because it is held that such Federal legislation as the "Post Roads Act" does not operate to give the companies to which it applies property rights in the streets and highways of a State.

However, the state should not discriminate in this way against the small companies, both on account of the public who wish to have modern telephone service at reasonable rates, and on account of such citizens of the state as wish to invest their money in telephone enterprises in their own communities. An additional evil that we have not mentioned is that such legislation puts the small companies at the mercy of the petty grafting of members of the board of supervisors, trustees and common councils, which seems to be not uncommon in the state of California.

Increasing Profits from Long Distance Business.

Once the necessary plant is provided there is nothing so good for increasing toll business as careful supervision and handling of connections. Theorists often undertake a discussion of the complex subject of pro-rating the salaries of superior officers among the different classifications of operating expense. Not infrequently they assert that it is wise to make the division between income-producing branches, such as local and long distance on the basis of the relative proportions of receipts from the different kinds of business. They argue that an efficient manager will divide his work in proportion to the returns.

This is in many cases contrary to the principles of good business, as any practical man will testify. It is a good plan to make a drive in the department which is weaker than it should be, and give it sufficient attention to build it up to its proper standing. Very few Independent plants are so handled that, whatever their connections may be, more money could not be made from toll business. The problem of securing good service for all applicants imposes rather more difficult demands upon the attention, and calls for more skill than is the case for local traffic. One of the many items in regard to which the acquiring of knowledge, and its application will bring good profits was admirably brought out in Mr. Vivian's paper on "Telephone Geography," printed last week, and there are many others, more or less familiar to all who have at all studied the toll business. The main point to remember is that this branch of telephone traffic is as responsive under good treatment as a sensitive and valuable horse; and the better care it receives the greater will be the returns it will bear to its owner.

Why a Depreciation Reserve is Needed.

In Minnesota there is a telephone company operating rural lines which has just learned that it is a good plan for a corporation, as well as an individual, to lay by something for a rainy day—or at least for a sleet storm. The New Ulm Rural Telephone Company has, within a few days, lost several thousand dollars worth of property, through storm damage, and, not having the price of the repairs in the treasury, is asking its 1,100 patrons to provide for the deficiency by paying a rate addition of three dollars per year. If it puts through a rate raise as a result of this mishap, it will be a case of luck favoring the careless.

The New Ulm company has been victimized by that sort of logic which is frequently heard among stockholders of small companies, who have not had years of experience in directing telephone companies. They argue that if a company keeps its plant in good shape, there will be no sudden call for a large sum of money. The error of this is shown in the present instance, and is demonstrated time after time, not only by disasters, but by changes in local conditions, or enlargements of policy, which result in the provision of new equipment on a large scale.

The evil effects of this hand-to-mouth policy are not felt at a time when money is coming in steadily to provide for extensions. But when construction work is at a standstill, if a sudden necessity for heavy replacements occurs, a company's credit is liable to be seriously strained in meeting the emergency.

This question of providing for depreciation brings up, with many small companies, the closely related subject of paying dividends. Officers of a large number of rural companies put earnings into extensions, and greatly increase both the breadth of the service and the physical value of the company. They are unable to see why increasing the value of the property is not exactly the same as adding to the financial strength of the company. If more companies would obtain the advice of skilled and experienced men on this point, or put some time and thought into studying out for themselves why it is not, they would be less frequently in trouble. True, they say that putting the company on a dividend paying basis, and tying up money in reserves, means operating the business, not for service, as originally intended, but for profit; and that they wish to avoid making any profits on the business. We submit that the management of any rural company who talk like this are likely to get their wish—but, in foregoing profits, may lose service and company too. Let's hear from some manager who doesn't believe this. Has any one courage enough to stand up and defend contrary views?

Co-operation of Stockholders.

Among all the features which have contributed to the success of Independent companies, there has been none more important than the loyal co-operation of stockholders. These have usually been among the public spirited men of the country, and have been persons of more than ordinary influence, and so their residence in the territory served by the company in whose ownership they share has been an asset of which it would be difficult to estimate the value.

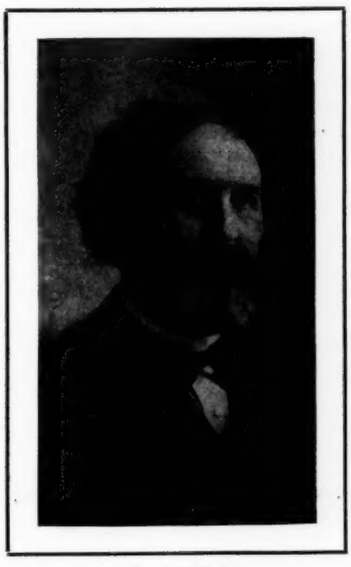
As the size of the plant, and the amount of money invested in it, grow, the problem of retaining a close personal relationship between the management and all persons interested in the company becomes more severe, but in no way does the importance of having such co-operation diminish. It is rather more necessary as the organization grows more complex. The greater number of intelligent and influential people there are working for the success of a company scattered through its territory, the more thoroughly will it be able to give heed to those features of personal or local significance which, in the aggregate, are such a factor in the success of the business. On this account the issuing of a letter to the stockholders of the United States Telephone Company is especially significant, because this organization is one of the largest, both in point of the number of investors, size of total investment, and extent of territory covered, of any of the Independent companies. Its attitude in this respect shows a continuance of the policy which has brought success to the small organizations, and furnishes an example which might well be imitated by other companies which have so large a number of stockholders that the management cannot be personally acquainted with the larger proportion of them.

A Sound Financial Policy

One of the most interesting papers presented at the recent convention of the International Independent Telephone Association was that by the Hon. E. B. Fisher, secretary of the Citizens Telephone Company, of Grand Rapids. Mr. Fisher based his paper largely upon his experience with the Citizens company, which is remarkable not only for its early entrance into the field, but for a continued growth, and constant sound and proper condition which is attributed in no small degree to the almost unique financial policy under which it has operated from the beginning.

Mr. Fisher said:

"The Citizens Telephone Company of Grand Rapids, Michigan, was organized early in 1895. At that time the Independent movement was very unimportant, and a problematical proposition. There were no movements of pronounced success, no efforts in progress in cities of considerable size and importance, and the strength of the opposition which the Independent movement was expected to encounter was universally believed to be very great and perhaps impregnable. Necessarily, then, such an effort as the Citizens company's was modest and tentative rather than positive and aggressive. However, the gentlemen associated in the original movement were business men of considerable experience in their community, and in the habit of carefully considering plans and possibilities before entering upon definite action. It was decided, after more than one thoughtful discussion, to organize a simple stock company with but one kind of stock —common—for sale, and to sell that stock invariably at par, for cash. No stock was given to promoters, and no one was ever allowed to buy the stock for less than par. The original organization was for a capital stock of $100,000, and the plans of the company did not go farther afield than the suburbs of our own city. At that time the Bell exchange, which was currently reported to be the largest exchange in proportion to the population in the United States, had less than 1,500 telephones. Because of electrical conditions in other fields of operation, especially as to scarcity of electric light and power propositions, electric traction lines, etc., the use of a grounded circuit or common return was the rule in telephone construction and it was generally believed that the $100,000 proposed would take care of such an exchange as would be needed for a town which then had less than 1,500 telephones, and a population, in the census of the preceding year, of about 60,000. Thus far, the planning as to the capital stock of the company was a simple matter, aside from the fact that from the outset it was decided to invite a very large element of the population, especially users of telephones, to become identified with the company as stockholders, to take at least a single share, which was then $100, in the new movement. An effort in this direction was made upon the theory that if the telephone users became identified with the movement, and it were in a large measure co-operative, no matter what competition should follow, there would be an innate strength in the movement very difficult to overcome.



Mr. E. B. Fisher.

"The project prospered. Telephones were wanted, and whereas the company began paid service on the first of July, 1896, with 832 telephones connected, it had 1,400 telephones in service on the first of September following, 1,776 on the first of January, and 1,919 on the tenth of May, or a considerably larger exchange within the first year than the Bell company had had in the same community, although, as already stated, it had the highest development in the country, and was about 18 years old. At this time the Citizens company had, say 300 stockholders. The movement was growing popular. But of course it was not all clear sailing because there were a few Bell stockholders in the same community, and there had early been a resort to free residence service and a greatly reduced rate for paid service which had affected the situation, at least in some degree. With something over 2,000 telephones in service at the end of the first year, with demands increasing, it became evident to the officers and management of the company that more money must be secured to take care of importunate would-be patrons, and that we were "up against" the necessity of planning a definite financial program as to the future.

"Our board of directors, which included bankers, merchants, manufacturers, and professional men, had many thoughtful hours in the consideration of this matter, and decided that the best policy would be to increase the capital another $100,000 and continue rigidly to sell stock at par—never less—and to devote a fair proportion of the profits of the business to dividends. No dividends were paid the first year the company was in operation, but with the beginning of the first quarter of the second year, after very deliberate consideration of the matter, it was decided to pay regular quarterly dividends, and it was believed that 2 per cent was properly available for that purpose. It was not believed that the net earnings would anything like supply the required funds for the further development of the plant, as has since been demonstrated, and hence that money for that purpose must be secured either from borrowing (floating or bonded indebtedness) or from the sale of stock. Indebtedness such as would be required to meet further growth was discarded as a doubtful and possibly dangerous expedient, and formal action for the doubling of the authorized capital stock was unanimously approved, first by the board of directors, and subsequently by the stockholders of the company who had been taken into the entire confidence of the management and had been given a thorough resumé of the situation and the opinions which actuated the management in the decision reached by the board of directors.

"Looking back to the conditions existing then, it is a matter of great satisfaction to us that we made the decision we did. Some of our neighbors, exhausting their original capital stock, failed to pay dividends and used their net profits for growth, and fell into a state of uncertainty and inactivity which was positively dangerous in the face of a struggle with an aggressive competitor willing to give even free service, and that for months and years, in the effort to destroy the Independent movement. Of course, when possible patrons of the Independent movement could not get service where they preferred it, they were compelled to turn to the Bell company, because the Independent movement had induced a tremendous activity in the telephone field and a very decided demand for telephone service among hundreds and thousands of people who had thereto-

fore not considered themselves able to afford and enjoy it.

"When the second $100,000 was exhausted, the demand for service was still growing, and the company found itself face to face with the problem of developing long distance service, because its home office was in the metropolis of a considerable region of western Michigan. Again the problem of finance was very much to the fore. Should the policy of increasing the capital stock and selling the authorized stock be continued, or should borrowing be resorted to? Bonding the company was mooted and debated very earnestly. There was not, however, in the board of directors any aggressive sentiment in favor of that proposition, and among the prominent stockholders many of whom were consulted, there seemed to be a general sentiment that it would be better to continue a policy which had thus far been successful and to again increase the authorized capital and to continue the sale of stock on precisely the plan so far in force. This was done.

"When the $300,000 had nearly all been used and the outlook of the company and its business very greatly broadened, several important meetings of the directors and officers of the company were held, and the possibility of bonding the company was more thoroughly considered than ever before. By this time, the Independent movement had shown positive strength in many other portions of the country, and the financial world was beginning to realize that there was a strength in the movement which was important and to be depended upon. It was quite evident that the bonds of such a company could find a market, but just at what price was not quite certain. Some Independent propositions had already been launched upon the basis of bonding as well as of the issuance of stock and were making headway, but at this juncture one of our most quiet and most careful directors, in the final debate of the matter, remarked that he did not believe in "putting a surcingle on a growing colt." There was a world of practical philosophy in that epigram. That sentence had so thoroughly illuminated the entire question for our directors that from that time forward the matter of bonding the Citizens telephone plant has never been seriously considered. Now please understand in this discussion and comment I distinctly asserted at the outset that in matters of policy wise and honest men have room for radical disagreement, and there is no criticism intended in the assertion that the Citizens Telephone Company adopted a policy which it believed to be wholly sound, and rejected any scheme looking to the issuance of either bonds or some other kind of stock.

"So in a nut shell, it may be stated that as the sequel of the company's financial growth from time to time, the authorized capital stock has been increased until it is now $3,500,000. The stock has been sold invariably at par—the money so obtained was required for the growth of the company and was only so used—dividends have been earned and paid regularly every quarter, have always been 2 per cent, and 45 such dividends have now been paid; and we have felicitated ourselves more than once over the fact that we never have put a surcingle on our growing colt. Had we, when we required an increase from a half million dollars to a million, decided to bond our plant and provide for the issue of a half million of bonds, it might have been exceedingly difficult either to have sold stock, later, or to have provided for a second issuance of bonds—a second mortgage—or to have provided, in order to sell more bonds, for the retirement of all the half million of bonds already outstanding. It might have been difficult to re-organize the company and plan for the proper care of the bonds already issued. It certainly would have been difficult to stand still at the end of our million of investment in a field which is now using $3,500,000 with advantage to stockholders and the public, and is very likely to require still more. So to us it seems as most fortunate that we were led to adopt a policy which has permitted our project to grow, to expand logically, and to secure funds as needed with which to take care of growth.

"We have in that way secured something over 3,000 stockholders for our corporation, an element of very great strength when business affairs are progressing normally and satisfactorily. We have now weathered what in some parts of the country, has been called a pretty serious panic and in common with our neighbors in the telephone field, have discovered that the telephone business is less affected by financial reverses than most all other business enterprises in the land; so that we have earned and paid dividends regularly and we have been able through the past year to secure funds as needed for continuing expansion when many other investments were vainly seeking customers. Our experience thus far leads us to assert that our policy was sound, and that any other policy might have been unsatisfactory or even dangerous. We see our way clear, as we need money to get it. We have taken the public into our confidence wholly in the matter, and having so many stockholders and such a thorough understanding with our people, we have been able to secure larger rates for our service as the development of the business and the changes in its conditions made it desirable so to do. We have been able to go to the people because we are theirs, and, per contra, they are ours for anything and everything that has been fair and right, and of course, with such large ownership among the people, we have speedily learned what was fair and right from the multitude of counsel—owners and patrons of the company.

"We are able, in the light of our experience, to commend our policy to any who may now be thinking of the development of an Independent telephone proposition. We know it is sound. We do not assert that it is the only sound way. We realize that if misfortune should come at any time, unpaid interest can't take the plant away from its owners. If there be little profit, that little will be divided pro rata, and the owners of the property will be compelled to be content. But whatever the condition, unless the property should be operated at an absolute loss, the stockholders own it and control it, and can continue the business at their pleasure and at their "own sweet will." We have believed and yet believe, that stockholders are vastly more interested and efficient in the interests of a property than bondholders, and in that direction we have felt that our securing of funds for expansion has been a sound financial policy.

"There can be no doubt that if positive misfortune should occur and dividends ceased or were largely diminished, stockholders would then be likely to offer their holdings on the market and that would be an untoward and possibly disastrous tendency; but even in that case the stockholders would be no worse off, or the corporation, than from the failure to earn interest on bonds, or dividends for first or second or other preferred stocks.

"Upon this topic hinge some further discussions which may more nearly cover the field intended in the assignment of the topic. It has been the Citizens company's policy to take the public into its confidence at all times. When in a number of instances it has been deemed desirable to increase the service rates, the matter has been thoroughly discussed with the customers of the company and their intelligence convinced. We have had very few cases where our attitude in such matters has been unpleasantly criticised or opposed. We have insisted that we were entitled to a fair return upon the investment for the owners of the company, and having so many owners of the company in the communities served, our efforts in that direction have been efficiently aided by a strong popular sentiment. In this particular, as it seems to me, the Independent companies have been vastly more sound in their financial policy that their competitor, and that policy should be continued and broadened. It is a matter of profound satisfaction to an Independent telephone man to read that a very large majority of the business men of a great community like Rochester, New York, have united formally in petition to the Common Council of their city urging favorable action in the increasing of rates

for an Independent telephone company serving them. Such experiences in the history of public service corporations heretofore have been most rare, and the fact that the Independent telephone movement has developed that sort of a sentiment in any community is greatly to its credit, and indicates a sound financial policy on the part of those actively identified with the movement.

"In another direction the Citizens company adopted what it conceived to be a sound financial policy—that is to say, it was not only entitled to secure the rentals from its telephone service, but to secure them in advance, in accordance with the contract made, and to discontinue service if rentals were not promptly paid. This policy has not been unkindly or disagreeable in its manifestation, but it has been positive and firm, and as a result the revenues earned are secured to a remarkable degree. It is probably true that very few other business enterprises in our region secure so large a percentage on their gross revenues earned as does the Citizens company. The average customer is inclined to respect an enterprise or corporation which respects itself and firmly insists upon its rights in a neighborly and kindly spirit.

"As a minor detail and another illustration of this fact, the Citizens company some time ago adopted the policy of charging for removals of telephones. In the earlier days of the company, when the competition was "something fierce" and the Independent movement weak and struggling, the policy of not charging for this sort of service was adopted because it was a policy in vogue, at least to a considerable extent, before the Independent movement began. This charging for removals in a system of between 30,000 and 40,000 telephones becomes a matter of some magnitude, and has resulted in a very considerable increase of revenue and at the same time a very considerable decrease in the service of that kind required of the company.

"In another direction the Citizens company has esteemed its policy. Rates for exchange service and for toll service have been based upon the equity of the situation and not upon conditions of competition. Rates have never been reduced to meet 'less than cost' and 'destructive' competition. Rates have never been increased simply because in that particular field the Citizens company had the monopoly and might demand 'all that the traffic would bear.' The uniform policy of the company has been to adopt a 'live and let live' schedule of rates and to adhere to it, ignoring competitive conditions as to that phase of the business. The exceptions to the success of this policy have been so few and so unimportant as to prove its general merit, and that it can be depended upon with the overwhelming majority of people.

"In another direction the Citizens company has had a policy which it believes sound, and the results have thus far been exceedingly satisfactory. It has employed in the various positions those whom it believed competent as well as honest, and always invested its funds directly in its plant. It has made selection of material through such representatives, has secured labor, and has built for itself. As a result it has a plant throughout its system with which its management is entirely familiar. It has been built at reasonable cost, and for the service intended. Special profit has not been made by any outside interests from the funds of the stockholders. In other words, there is only one wheel in the entire institution and the whole business, long distance and exchange, is one corporation and all built directly by the company.

"In another direction the company has adopted a financial policy that has at times been somewhat burdensome to continue, but the general result is believed to be worth what it is costing the Citizens company and others who agree with it in this policy. The Citizens company has never lived to itself alone. Its management was identified with the very first movement for associated effort, whether in the State Association or in the National Association. The management has given freely of the time of its employes to assist in such efforts, and has met the expenses resulting from such effort cheerfully and with reasonable generosity. It is believed that money so used, if intelligently applied, brings back to the contributor ample returns. It was realized early in the struggle of the Independent movement that unless there were concerted action, detached companies and systems might be crushed in detail either by litigation or outrageous competition, and the Independent movement thus seriously crippled or destroyed. It is the opinion of the management that this sort of action should be continued and broadened. The recent announcements of litigation against the Bell company in various parts of the country constitute a phase of this policy which is believed to be entirely sound, and of great importance to the finances of all the Independent telephone interests of the country. Permit me to say that this movement is a phase of financial policy which all of us should thoroughly understand and appreciate.

"It is not necessary in considering this topic to discuss the necessity for good service, constantly growing better, as a sound financial policy; it is not necessary to magnify the importance of courtesy and honest dealing on the part of employees, which is essential in every business enterprise, and particularly in the telephone business, as a sound financial policy; it is not necessary to enlarge upon the fact that we should be honest with ourselves, and in construction, operation, and in maintenance and reconstruction must have due consideration of depreciation and of the income wherewith to meet it; it is not required at such a time or in such a paper to discuss the by-products of the business, the different uses that our wires may be put to, that our service may afford as new sources of income, for those subjects are abundantly covered in other papers which you are enjoying or will enjoy; it is not necessary at this time to enlarge strenuously upon the absolute necessity of encouraging Independent manufacturers and refusing patronage, no matter what the bait may be, to companies or interests which in the nature of their business are inimical to the Independent movement. The soundness of that policy nobody can question when he analyzes it; it is only necessary to remember the lessons of the past, to at times retrace the steps by which we have grown to our present importance and usefulness, and to emphasize the fact that we shall only be entirely sound financially when we realize our mutual obligations, our mutual interests and the fact that in associated effort is our greatest strength."

A Comment on Telephone Etiquette.

In a recent editorial the *Chronicle* of Houston, Texas, says:

"Why should a man, simply because he can get the loan of a telephone, be permitted to interrupt the most private and important conversation and business deal? What he wants is often only a favor for himself. Sometimes it is a mere idle query. Men ring up business men just to tell a funny story, and young ladies sometimes wrongly ring up clerks and employees at the busiest time of the day, just to make social engagements.

"Somebody ought to get out a book on the ethics of telephoning. Of course, it is possible for the man of many affairs to have his private secretary answer the telephone and call the boss only when the business justifies it, but there is danger in this system unless the man adopting it be independent of the world, as people are touchy and apt to think him stuck-up when he is acting in mere self-defense.

"Let us have more consideration and telephone only when and as we ought. The habitual telephone bore or butter-in quickly becomes known and gets himself or herself disliked according to desert."

Electric Light Man Favors Careful Tree Trimming.

In a letter to the *Electrical World*, Mr. A. J. Sproles, the superintendent of the Greenwood municipal water and electric light plant, Greenwood, S. C., writes of the treatment of water oaks in and around Greenwood as follows:

"While my opportunities and experiences along these lines are limited and circumscribed, I am in full sympathy and accord with the widespread movement for 'Civic Beauty,' and keep 'an eye single to it' in every department of our work, whether in setting poles, stringing wires on the streets or entering premises, hanging lamps or pruning trees. The latter has given me more concern and 'troubles within and without' than all the others combined, which, I dare say, is the experience of many other superintendents.

"Our shade trees are, mainly, water oaks, and, if not disturbed, grow vigorously and with great beauty and symmetry, but by injudicious pruning they may be made very unsightly, against which our citizens have always rebeled and risen up in arms, and I don't blame them.

"To avoid unnecessary trimming and incident mutilation, where possible we dodge the trees, believing a crooked line more sightly than a mutilated tree. But when we must pass through or over them, we bracket the largest limbs of the larger trees and cut the tops smooth across the smaller ones when they reach our wires, allowing the side branches to grow up and overlap our wires; after which, we only keep the twigs cut from the circle thus formed, which will not show much from the street and still afford abundant shade. We have not followed this plan long enough to be positive of results, but it promises well.

"Then too—while not a forester—I find this plan works well in that it is carried out under my personal supervision, and while it is being done I entertain the nearby and irate citizens by entering into sympathy with them, telling them my plan in detail, how the current will kill the tree if left in contact, how its branches cut off light and all the other reasons I can think of why they have to be pruned—with the never-failing result that it pacifies, allays anger and saves friction, even if it does not help the trees. I find it is well to have a plan for doing everything, and where the public is so vitally concerned to let the people know it in detail."

When the Toll Lineman Is Up to His Job.

An article by E. L. Hammond, in the *Michigan State Gazette*, is of the kind that every lineman who works on lines between exchanges should paste in his hat, as a creed worth living up to. It is a first-class catalogue of the salary-raising powers that every lineman carries around with him, if he will only use it. Mr. Hammond says:

"The care of toll lines and their troubles form a very important part of a first-class toll lineman's duties. He should replace broken glass, pins and clear wires that are in close proximity to each other, guy wires, or wires of other companies, or anything that would in any way cause trouble *in the future*. Where cross-arms, poles, guy wires or anything of a nature that he is unable to repair at the time of discovery are in need of repair, he should notify the person who is directing him, that it may be repaired at the first opportunity, thus keeping the lead in first-class condition. The wires should be free from trees, to prevent leakage in wet weather, and the limbs from crossing the wires during wind storms.

"A first-class man carries different sizes and kinds of wire, also plenty of copper joints, thus avoiding temporary repairs, which, if practiced, soon become numerous, causing noisy lines from corroded or poor connections, which make a high resistance, throwing the line out of balance. By not keeping the lines in good conditoin troubles become more frequent, which makes more work for the men and causes poor transmission.

"In addition to the very important work on the maintenance of toll lines, a first-class toll lineman will give careful attention to all instruments at toll stations, and to small exchange switchboards that are in his division and under his care.

"A toll lineman should make inspections of toll station instruments or small exchange equipments that are in his division; inspections can often be made when waiting for a train after the clearing of trouble.

"He should know how to string lines, install telephones neatly and properly, connect the lines into the switchboard, giving them the proper protection to protect the switchboard and telephones from lightning and other elements, which will in any way injure them."

The Oldest Telephone Operator.

Much has been said by various owners of telephone systems relative to the precociousness of their offspring in connection with the operation of telephone switchboards, and numberless items on this subject have appeared from time to time in the various telephone publications. To date, however, so far as the writer is personally aware, says Mr. L. E. Knapp in a letter from Dallas, Texas, no claim has been made as to the age limit for employees for the operating department.

In this connection I think it likely that Mrs. Bynum is the oldest operator in the United States and possibly in the world. Mrs. Bynum, the mother of J. Fowler Bynum, owner of the Eagon Branch Telephone Company of Kaufman, Texas, every day operates a system having very nearly one hundred telephones. Mrs. Bynum is seventy-two years of age, notwithstanding which, she has a very good "telephone voice" and her hearing is most

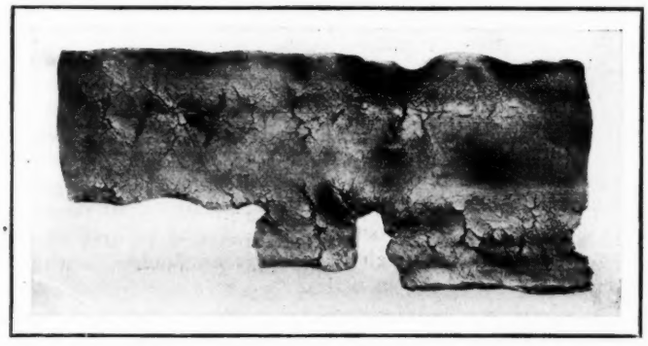
The Switchboard and Operator at Kaufman, Texas.

excellent. She recalls without reference to any bulletin the combination of rings for any subscriber who may be desired upon the system. She states that she enjoys the task of operating the switchboard and telephone system very much and that, in fact, without it she would find it rather hard to pass the time.

The Deterioration of Lead Sheaths of Aerial and Underground Telephone Cables

By Thomas G. Spencer

At the outset a review of the mineralogy and chemistry of lead will be of value. Lead is one of the softest of metals. It can be scratched with a nail; easily cut with a knife and makes a streak on paper. The specific gravity is 11.33, or is, for its volume, over 11 times as heavy as water. The color is bluish-white, tending to gray, with bright metallic luster when newly cut. The bright surface is soon



Typical Case of Crystallization, Produced by Vibrating Bending. Note Cracks in Two Originally Opposite Rows.

tarnished when exposed to air by taking on a film of what is supposed to be a suboxide. Its melting point is about 633 degs. F. It is highly malleable, being rolled easily into thin sheets, or, when slightly heated, forced through perforations, as in the making of lead-pipe. It is but slightly ductile and has so little tenacity that a wire 1/12-in. in diameter will not support a load of 20 lbs. It has no elasticity and when stretched or bent will not regain its shape. If you bend a lead pipe through an angle of 90 degs. the thickness of the pipe on the outer side of the turn is materially reduced, and though you bend it straight once more the pipe remains thin and weak at that point. So far is this true that makers of lead pipe, for the forming of traps for plumbing, are forced to employ a special machine, instead of bending straight pipes.

Lead will last indefinitely under favorable conditions, as is attested by the existence in good preservation of water pipes, weights, rings and ornaments, inscribed and dated, which have come down to us from the earliest Roman periods.

Nitric acid will dissolve lead readily; acetic and hydrochloric acids act on it slowly; while sulphuric acid, unless hot, has no effect. Pure rainwater acting with the free oxygen in the air forms on the surface of lead a hydrated oxide (Pb 0 H2 0) which dissolves in the presence of carbonic acid, so that room is made for further corrosion. The presence of nitrates or ammonia in the air further intensifies this action.

To return to the subject of our discussion, the causes for the deterioration of cable sheaths can be divided into six general groups:

1st. Mechanical Injury. 2d. Chemical Decomposition. 3d. Electrolysis. 4th. Vibration. 5th. Lightning. 6th. Impurities in the Lead.

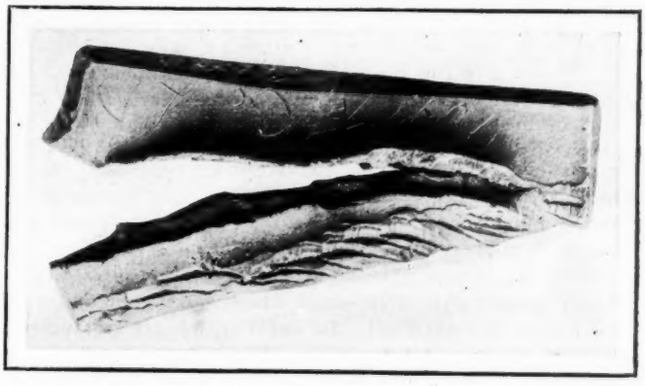
A seventh cause might be added, viz.:—the famous cable bug whose depredations in Australia are said to have assumed formidable proportions, and whose work has been found also in the southern portion of the United States and in southern California. This cause could rightly be included under mechanical injuries, but a further discussion of it will not be given here. Two or more causes frequently act in unison in destroying a cable sheath, but I will try to take them up separately for the sake of conciseness.

Mechanical Injuries—the first cause—are the most frequent in occurrence, being responsible for much more than half of the cable troubles. Such injuries occur in every conceivable form resulting from improperly wiped joints along the line of causes to the small boy with a shotgun.

Too great care cannot be exercised in the placing of aerial and underground cables when you consider how comparatively frail a covering is the lead sheath. Roughness in the handling of cable reels, and in the drawing of underground and aerial cables; too rapid hauling over pulleys; buckling of the cables and carelessness in any one of the many details of construction, are sure to produce trouble later on.

Another fertile source of damage is in the carelessness of linemen on the poles. It is an easy matter to jab a spur into a cable; to catch hold of a cable loop is of great assistance in climbing, and incalculable damage can be done by an inexperienced person in a manhole. Teach your men that they are dealing with valuable property, and then insure the safety of your cables by protecting them wherever possible. Put molding over cables which run down poles to terminal boxes, and support cables in manholes. Your own men are not the only offenders, as the employees of other companies, which sometimes use your poles and conduits, are not particular about your property. Cases of damage have often been traced to the opening up of the streets by gas companies.

Especial attention should be given to keeping clear the



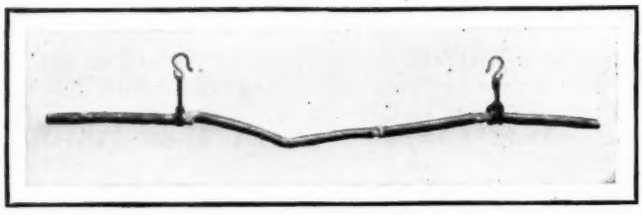
Effect of Impurities; Fissure in Middle of Specimen Filled with Bright Red Substance, either Litharge or Red Lead.

right of way. A swaying tree limb will quickly disintegrate a lead sheathing through constant rapping, or, by abrasion, wear right through it. Branches which appear to be at a safe distance will frequently, during a storm, reach your cables. The Rochester Telephone Company, realizing the importance of careful tree trimming, makes the round of its entire property once a year, sending with the wagon a

*Abstract of a paper presented at a meeting of Independent telephone men. Mr. Spencer is chemist of the Stromberg Carlson Telephone Mfg. Co., which has copyrighted and printed this paper for free distribution to its customers. Reproduced in TELEPHONY by permission.

representative of the Park Board, who gives authority to do all necessary trimming. This trip is made in February or March, before the foliage appears, as at that time less objection is met with from property owners. When it is found impracticable to cut a limb, a wooden sheath is placed about the cable at the exposed point.

Our second and third causes—Chemical Decomposition



Length of Cable which was Suspended from Elevated Railway Structure. Vibration Caused Fracture at Each Hanger, and in Two Intermediate, Evenly Spaced Breaks.

and Electrolysis—can best be taken up together. The theory of electrolysis most familiar to us is that cables picking up stray currents from the street railways become a part of the return circuits of those railways. When the rails are properly bonded or when return feeders are used, these currents are reduced to a minimum; but in spite of the precautions of the traction companies cables frequently become electrified. Where the current enters the cable no damage is done, but when the current leaves the cable in a moist spot, as is usually the case, the water is decomposed and free oxygen is liberated, which readily attacks the lead sheath, decomposing it. This condition is avoided by connecting the lead sheath to the trolley rails at frequent intervals with leads of copper wire, or by running a feeder from the cable direct to the negative bus-bar of the power house. Where this is not feasible, the stray currents can be carried off to a well-grounded copper plate.

Another theory well worth your attention will require a long discussion. White lead which, as you know, is used largely in the manufacture of paint, is made as follows: Hydrated oxide of lead (Pb O H_2 O) mixed with carbonate of lead (Pb O_3) in the proportion of 25 per cent of the former to 75 per cent of the latter is cast into little discs not more than ⅛-in. thick. These discs are put into glazed earthen pots with a small quantity of acetic acid (vinegar if you like to call it such), then a number of pots are put into a bin and the whole is covered with spent tanbark and left for three months. The temperature rises; complex chemical decomposition takes place, and the lead is converted into what we call white lead to the amount of about 65 per cent of the materials put into the pot. The residue is remelted and is again put through the same process, until all is converted.

To pass back to the action on our cables. When water is absolutely pure it has no action by itself, but, as said above, in the presence of the free oxygen in the air the lead is quickly attacked with a formation of hydrated oxide which is appreciably soluble in water and forms an alkaline liquid. When carbonic acid is present or nitrate of ammonia (which you often smell when walking in the street) the action is intensified. In ducts which are not properly drained this is particularly noticable. The water, of course, percolates from the surface of the street and in passing through the ground picks up the sulphur and nitrogen compounds that are in the coal gas with which the ground is permeated. As a rule, it also gathers some chlorine; then while working into the duct, through the ordinarily poor cement joint, it gathers up carbonate from the cement. The water also takes up in the streets a certain amount of tannin from the leaves, grass, twigs, etc. Therefore, when the water finally reaches the inside of the conduit it is ready to begin the attack on the lead. The cable lies in a glazed earthen tile—your pot at the white lead manufacturers.

You will note from the descriptions given above that you now have in the subway all the component parts to start the making of white lead out of your cable sheath, and when the cable sheath gathers up the return current from the street railroad you might have a slight element of heat, and therefore, the complete proposition of making a poor species of white lead—an action otherwise called electrolysis.

For the protection of cables from electrolysis, there are but three things to do:

1st. Build the conduit so that no water will ever lie in it, i. e., with a slope from the middle of the duct both ways to the manholes.

2nd. Try and make absolutely water-tight joints.

3rd. Continually make electrical surveys and ground the cable whenever necessary.

It will make no difference what you do with the lead sheath; if it is thick it will take longer to eat away than if it is thin, but it will decompose just the same unless you take these precautions. Unfortunately very few telephone companies follow out the above. They think all they have to do is to throw the subway in and that as long as they can pull a cable through it it makes no difference whether or not the cable lies in water.

Sulphur dioxide also causes trouble. This gas comes from the burning of coal, and, of course, in smoky cities the atmosphere is loaded with it. It is especially bad for cables near railroad yards and under railroad bridges. Sulphur and nitrogen compounds in coal gas are also a source of much annoyance and tend to corrode lead very fast. A telephone company in Indiana had a cable strung over a small engine house which burned soft coal. The cable was replaced three times in twelve months, and then it was found necessary to make a detour around the building.

Certain factories produce gases which are highly injurious. Gases given off by the Solvay plant for making salt, near Syracuse, eat up even the steel messengers. One of the camera plants in Rochester ruined two cables in a year, but when the plant ceased operations no more trouble was experienced. Vinegar refineries produce acetic acid fumes which are hard to contend with, and smelters have been known to inflict much hardship in their vicinity.

The only remedy I could suggest in the instances referred to would be the application of an asphalt paint to the exposed cables, but I am not sure that this would be entirely successful.

Vibration, the fourth cause of lead disintegration, has been widely discussed, and though it is undoubtedly responsible for the loss of many cables, it is very difficult to point to any particular case of this trouble. Vibration usually operates in conjunction with some of the other causes spoken of above.

Common lead ore is called "galena" and its structural form is cubical crystals; the lead carbonate structural form being rhombic crystals. A drop of molten lead, if allowed to cool undisturbed, will show a crystalline form under the microscope, so that lead may be said to be crystalline by nature, having no fibre like that in wrought iron, but being more on the order of cast iron which is made up of little granules.

Practically all metals are capable of crystallization by partial freezing, with alternate expansion and contraction, together with vibration. You must remember that both tin and lead are malleable, but not ductile, and an amorphous solid body (one with no definite structure) may also undergo partial crystallization by molecular re-arrange-

ment, thereby arriving at a more or less complete crystalline structure.

Crystallization in aerial cables is due to freezing, contraction and expansion, together with vibration, aided by the sulphur dioxide in the air and by currents in the sheaths induced by parallel high tension circuits. Grounding the cable sheath to the messenger will minimize the effect of these currents.

Due to the fact that lead is cubical in form and is malleable, but not ductile, the constant stretching of the cable sheath, together with vibration and the action of he atmosphere, reforms again in little cubes the molecules which had been distorted by the press into a homogeneous mass of lead.

A tendency toward vibration is incurred by—

A. Too much slack in the messenger.
B. Too little slack in the cable.
C. Use of long spans.
D. Suspension from vibrating structures.

When a cable has been given no attention for two or three years you have often noticed a considerable sag in the span, and that when the messenger is again pulled taut, two or three feet of cable have to be cut off and a new splice made. This shows you how the sheath stretches, and, failing to draw itself back by contraction, the little molecules of lead get together again in little cubes, causing crystallization in the sheath at once. This stretching in connection with the amplified sway of the span in the wind causes a bending to and fro of the cable, which may eventually crack the sheath. The action is naturally most marked at the ends of the cables near the points where it is anchored.

When the string of a musical instrument is touched it sets up a vibration throughout its entire length, and the sound produced by this vibration is called the "true note" of the string. In addition to this "true note" there is also set up a series of harmonics or intermediate vibrations which act independently, but in concert with the end-to-end vibration. In consequence of this there occur intermediate quiet points, or nodes, between the harmonics at equal distances throughout the length of the string.

The vibration of a cable may be compared to that of a musical string, and, with this idea in mind, breaks at a distance from the ends of a cable may be accounted for satisfactorily, for it is well known that the continuous bending of lead through an almost imperceptible arc, back and forth, will cause fracture.

Too little slack in the cable is a serious defect in construction, because when the messenger gradually elongates there is no provision for the greater arc of the span and the lead sheath must stretch, and, consequently, thin out and draw apart. Lead has rather a high coefficient of expansion and contraction with changes of temperature, so that where a cable has been strung in summer with insufficient slack the natural result is a stretching of the lead with the coming of winter. In some countries lead plates are extensively used for roofing, and in the laying of these plates the more careful allowances are made for changes in temperatures. Unskillful laying will cause the plates to break up or crystallize.

The use of long spans merely intensifies all of the phenomena just mentioned. The wind has greater play; the vibrations are amplified; the action of expansion and contraction is augmented, and the increased weight of the cable itself aids in the stretching.

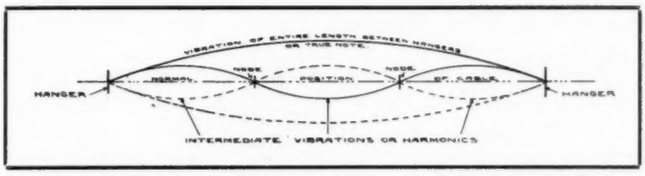
Cables suspended from vibrating structures are frequently in danger. Such structures are bridges, frame works of elevated railroads and the like. Poles supporting trolley spans may at times cause mischief. Here we have sources of vibration which spread to the aerial cables. A few marked instances have come to my attention, and no doubt many others, if studied, might be attributed to this cause.

A three-foot length of lead and paper cable sent in by the Metropolitan West Side Elevated Railway Company of Chicago, shows the effect of vibration. The sheath of this cable shows a circular break clear through to the paper at points where it was suspended by the margin hangers, and also lesser breaks at three intermediate points, each break equally distant from the other. This is a clear case of vibration due to the passing of trains over the iron structure on which the cable was strung; the breaks evidently occurring at the nodes, or quiet points.

Let me describe another interesting case. On the railroad bridge across the Missouri river at St. Charles, Mo., was run a lead and paper cable. The cable lay in a triangular wooden box placed on the ties. When trains passed over it the bridge sprung down from its position a number of inches at the center of each span. Consequently the cable, while it was free from electrolysis and other conditions, was constantly being stretched and vibrated, and then the cold contracted it and the sheath crystallized nearly its entire length. All this was due purely to the mechanical action of trains passing to and fro on the bridge. As the cable lay in a box it was supported throughout, which is considered the very best practice, but this bridge vibrated so badly that no precaution could save the cable.

The fifth cause—Lightning—we need not stop to consider here. However, it might be interesting to remark in passing that when lightning gets into a cable it most frequently breaks through the sheath at the bottom of the loop leading up to the cable box. This is probably due to the electrical impedance of the loop, which, though making but a half turn, offers considerable impedance to the high-frequency discharge of lightning. If the current does not break through at the point named, the point at which the sheath will be injured cannot be predetermined, for the break may come at any spot throughout the entire length of the cable.

The sixth and last cause to be considered is the presence of impurities in the lead. The impurities most commonly found in lead are iron, antimony, sulphur, zinc, arsenic, silver and tin. For the most part these foreign substances are removed at the refineries, but that some remain when received at the factory is shown by the dross on the surface of the melted lead in the kettles. The lead comes to the manufacturer in 1-00-pound pigs. These are melted in permanent kettles over a brick furnace. The lead is stirred thoroughly so that the impurities which oxidize more readily than the lead form a dross on the surface. This dross is removed until only a thin film of lead oxide, called litharge (Pb O) remains on the molten surface, showing that no impurities are left. The cylinder of the lead press is then filled with molten lead through a trough reaching from the kettle. By hydraulic pressure the cylinder is forced up



This Diagram Represents the Motion of a Suspended Aerial Cable, and Shows the Natural Motion of the Cable in its Fundamental and Harmonic Vibrations.

against a stationary plunger, called the lead ram, and the lead is allowed to cool for about five minutes before the sheath is run. In very rare instances it happens that a lump of dross or an accumulated bit of litharge is imprisoned in the cylinder and is run out as a part of the sheath. This foreign substance is soft and breaks up easily, allowing moisture to enter the cable. When such a fault occurs it

can be diagnosed readily. Possibly the litharge (Pb O) is, occasionally, by further oxidation converted into red lead ($Pb_3 O_4$).

If you have followed me carefully you will realize that there is no way to preserve your cables other than to avoid, wherever possible, the dangerous conditions which I have just pointed out. You must have sound construction to begin with and must be on the lookout constantly to maintain your plant in first-class condition. The presence of 1 to 3 per cent of tin in the lead sheath is of great service in the work of construction, particularly in case of underground cables, helping to maintain the shape of large cables which if only slightly flattened would be very hard to get into their ducts. Tin hardens the sheath, making it less subject to mechanical injury, and in that way adding to its life. It is doubtful, however, if the use of tin will lessen chemical action or crystallization.

The use of sheaths heavier than the so-called standard is advocated by many large operating companies which claim that money so spent is well invested. Here the point to be determined is whether the decreased cost of maintenance will warrant the increased cost of construction. Of course, no thickness of lead will render your cables indestructible, for if they are exposed to unfavorable conditions they will tend to deteriorate and in time will fail. You can minimize your troubles but cannot prevent them entirely, as one cannot control all of nature's doings.

In our efforts to fix upon the causes of cable deterioration, we must constantly bear in mind that cables only occasionally go wrong. It will not do to devise a reason which is applicable in every case, because cables do not deteriorate in every case. Rather must we study all that is exceptional in the location and exposure of the cables that do deteriorate. I believe that the present methods of cable manufacture and cable construction are largely right, for it is only in rare instances that we have trouble. Should we not find in these special cases, rather than in the conditions of general practice, the reason? Too often in studying our problems we do not recognize that the causes for special occurrences are not to be found solely in general conditions. When in any particular case we shall have discovered the unusual condition, I believe we shall have no difficulty in prescribing the remedy.

Learns to Play Bagpipe Music By Telephone.

A music lesson on bagpipes was given over the telephone between Minneapolis and St. Paul last week, according to the St. Paul Pioneer Press.

"The feat was performed by Capt. George Sinclair of Minneapolis, formerly in the service of the late Queen Victoria as piper in the Scotch guards, and William Wallace Robert Bruce, a well-known piper of St. Paul.

"Capt. Sinclair sat in his chair in the Mill City police headquarters, while Mr. Bruce was at his home,puzzled over a new hornpipe composed by William McKay of Ayrshire, Scotland. He appealed to his brother Scot in Minneapolis.

"According to the captain the piece is a very difficult one and if your fingers are not pretty limber you are apt to get caught on it. There are crochet (not the kind worked with a needle), grace notes, several varieties of hemi, demi and semi quivers, and also six distinct brands of quavers in it. Therefore, when Mr. Bruce appealed to the captain for assistance the latter was 'up against it' for a minute.

"Placing his lips to the telephone transmitter he puckered them into a whistle and went through the knotty piece, note by note, getting in each and every grace note, crochet, hemi, demi and semi-quiver, and also all the quavers. He stopped for breath and then repeated the air.

"There was an anxious silence and then from the St. Paul end of the line came the tunes of a bagpipe playing the McKay hornpipe just right. Next came a cheery voice saying, 'Hoot awa, mon,' which ought to mean in Gaelic, 'Well done, George, Scotland forever,' and the music lesson, the first of the kind on record to be given over the telephone, was over."

Why He Waited on the Party Line.

Claiming that it is a report of an actual incident, the *Operating Bulletin,* published by employees of the Chicago Telephone Company, recently printed the following:

I had my hat on, all ready to catch a train. I had an important business matter to settle with another business man before I went. I picked up the receiver, the exchange operator answered, and I asked for the number I wanted. My manner must have indicated to her that I was in a hurry, for she went to work immediately, bent on performing her task. She did it a little too well. I was connected with the number I called, but some one had gotten ahead of me and I could hear the conversation. This is what greeted my ears, and I listened a moment, swearing gently under my breath, as I watched the seconds fly by as the hand on my watch crawled around only too swiftly:

"Hello, is this Ann?"
"Yes, who's this?"
"You know."
"No, I don't."
"Yes you do."
"I do not."
"Stop yer kiddin'."
"Awgoan."
"Who is it?"
"You know—guess."
"I don't want to—I'm so shy, you know."
"Guess once anyhow."
"Oh-h-h-h-h-h-h-h-h."
"I told you you knew."
"Oh is this Charlie?"
"Naw this ain't Charlie."
"Who is it then."
"Why don't you know me."
"Oh yes, you mean old thing. Why didn't you talk like yourself in the beginning."
"I knew you knew me, but who is Charlie?"
"Oh, a friend of mine."
"Is that so."
"Yes, he and me are good friends. No, I'll tell you; he works for the ———— Company and calls up here every day."
"Say, Ann, you working nights now?"
"Well, I just started in."
"Did you?"
"Yes. Oh say (softly), my boss is a crank."
"Is he?"
"Yes."
"Say Ann."
"What."
"I want to see you some night this week."
"All right, when?"
"Wednesday?"
"All right."
"Thought I'd call you up today. I haven't much to do."
"Neither have I."
"Get your raise?"
"Yes—I'm going to get it Saturday."

Here I hung up the receiver. This is what those two employees were paid for. I missed my train. I also missed the man. He lost and so did I. What can you do under such circumstances?

The Development Study

A Description of a Method of Making a Development Study With an Outline of Its Relation to the Central Office Location, and the Design of the Entire Plant

By S. D. Levings

In presenting the following matter, the writer feels that a foreword would not be out of place, to thoroughly acquaint the reader with the purposes for which it is intended. The methods described for the procedure in making a development study, together with the discussions as to its value and importance, in determining the location of the central office and general influence on the various portions of the plant, are not intended to overthrow or replace any knowledge or opinions held by the reader, nor are the methods cited to be understood as the only ones by which an accurate result can be reached.

The methods and theory submitted have been used in the design of several plants, and their success in these instances has stood the proving test of time. It is hoped that the rules will not be considered inflexible, nor that they will be considered applicable to every case. There may be many ways of making a development study, equal in efficiency to the procedure here set forth, and which will insure results equally accurate and reliable, but the writer believes that good results can be obtained from these methods if they are intelligently applied to each case in hand.

That the practice in the art of telephony is no longer constituted on "cut-and-try" methods is universally acknowledged. It is needless to call attention to the amount of business that is daily transacted over the telephone, or to the degree to which it is relied upon, both in the social and business worlds. It would seem then, that in view of its great importance, the telephone exchange should be constructed from the most scientific standpoint possible, and along well defined lines, determined by the experience of preceding years. The growth in the art has been strictly toward a more scientific basis of reasoning, and toward the establishment of standards upon which to calculate all portions of the operating and distributing plant. It is with what may well be considered the foundation for these standards and calculations, the Telephone Development Study, that we are now concerned.

PROGRESSIVE STEPS IN MAKING STUDY.

The steps in the work of making a development study divide themselves into groups, according to the chronological order in which they naturally come in performing the work, and are set down in the following table. They will be treated in the order indicated:

1. Preliminary classifications of areas.
2. Population estimate and curve.
3. Methods to be followed in making study.
4. Preliminary work in the office.
5. Field work.
6. Final work in the office.
7. Final classification of areas.
8. Conclusions based on results of study.

PRELIMINARY CLASSIFICATION OF AREAS.

The classification of areas would most naturally seem to be the outcome of the development study, and as a matter of fact is so in its final form, but many times it is very desirable to classify a town before time or money has been expended on a development study. This rough method will be treated, following the brief explanation of classification and methods used in classifying.

In general, it may be said that a city, town, or area, is either good, fair or poor, from the telephone development point of view, it is generally classified into three divisions, A, B and C, in proportion to the development that may be expected to occur, expressed in terms of telephones. The class in which an area is to be placed is determined by a figure known as the development ratio. This ratio may be defined as the ratio between the number of telephones and the total number of inhabitants in the area. From a study made of conditions in a multitude of cases, and from the data thus gathered from time to time, concerning this development ratio, rules have been decided upon and accepted, which are used to classify areas. These rules are:

1. When a town will show one telephone for each ten inhabitants, or a ten per cent ratio, the service being given from a plant 10 to 15 years old, it is considered a Class A town.
2. Where a town will show a ratio of from 6 to 8 per cent, served by a plant 10 to 15 years old, it is placed in the second or B class.
3. Where a town will show a ratio of less than 6 per cent served by a plant 10 to 15 years old, it is considered as a class C town.

The above classifications are for plants existing and operating at the present time, which have been in existence for from 10 to 15 years, it having been shown that a very small percentage of the present Independent plants are over 15 years old. These figures are necessarily much lower than those based upon a plant to be built today, because the service from the older plants has not been what the service of today is, and an equal development can not be expected. This service efficiency which so largely affects the development ratio, has been steadily on the increase. The present operating plant has had to go through the experimental stages, and is in a way a martyr to the cause. It is owing to the changes in apparatus, methods of construction and service, coupled with the fact that a greater reliance is placed on the telephone today than ever before, and to the fact that it is generally accepted as an integral part of twentieth century life, that we find our basis for expecting a greater development now, and in the future, when service is supplied by a newly constructed plant, than could be safely predicted a few years ago. It therefore becomes apparent that new calculations must be made for the classification of a town to be supplied with such service, both for the present and future.

These figures, based upon data obtained from detailed observations, are as follows:

1. Where a development ratio of 10 per cent can be expected initially, and a 15 per cent ratio at the end of 20 years, the town is considered as being in class A.
2. Where a town will show an initial ratio of 8 per cent, and a ratio of 12 per cent at the end of 20 years it is considered as a class B town.
3. Where a town will not show an initial ratio of 8 per cent, or 12 per cent in 20 years, it is considered a class C town.

Before looking into the causes for the various classifications in detail, attention should be called to the ratio curve shown in Fig. 1. It is often desirable to know the development ratio of a town at some period during the 20 years, in order to make future estimates, and for this reason the curves were made to show the increase from 10 to 15 per cent in the case of class A towns, spread over the 20 year period and also in the case of the class B towns. The class C towns, being below that of the class B, a limitation was not placed upon their ratio, it being deemed wise to set the ratio for each particular case in hand. The methods used to arrive at the data for the curves are very evident to an observer, and need not be taken up in detail.

The development ratio or value of a town or area is usually

based on one of three things: First, the revenue which may be expected from local service; second, the revenue which may be expected from toll service, and third, the revenue which may be expected from the first two. This value, or revenue, varies with each town, and is generally due to its geographical location and its commercial condition. In using the word revenue, the relation that it bears to the development ratio must always be borne in mind. Therefore, when the value of a town is expressed in terms of its revenue from local or toll service, or a combination of both, its development ratio is at once understood to be in proportion. Thus a town from which good revenues are expected from local service will have

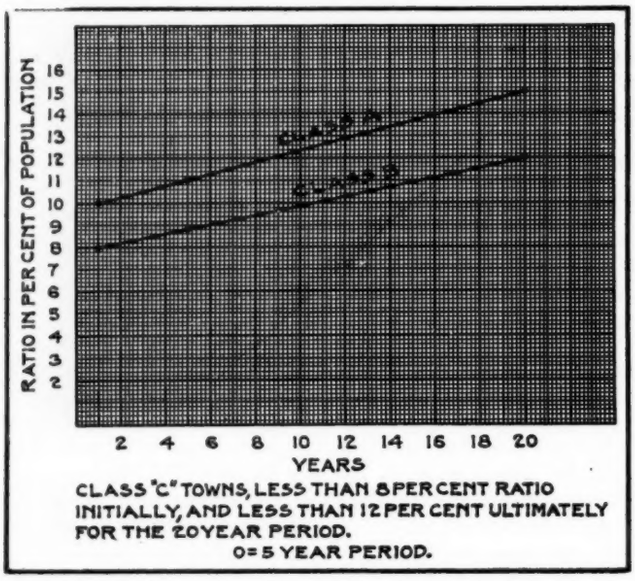


Fig. 1. Ratio Curves, from Which Future Development is Predicted.

a good development ratio, and in the same way the toll service, and the combined local and toll service should be considered.

From a study of the classification portion of the work, it has been found that it does not always follow that a town from which large revenues are expected from local service will show a proportionate return from toll service, and vice versa. This condition, it is admitted, is rare, but in order to consistently cope with all conditions it should be recognized as a possibility, and the means for discovering it made clear. To briefly illustrate the causes for such a condition, which we may term an inconsistency, consider a town not so geographically located as to lie in the path of an important toll route, and of such a character as to be independent, to a large degree, of the surrounding towns for its supplies, or as markets for its products. For such a town good revenue may be expected from local service, if a class A town, while on account of its independence and isolation, the toll revenue would not amount to a very considerable figure.

The reverse condition of the example just cited, that of a town from which good revenues may be expected from toll business, but poor ones from local business, would be a town lying closely adjacent to a large commercial center, and primarily a manufacturing town. Generally, the offices of the factories in the town would be maintained in the city, in which the products of the factories are marketed or distributed. It is easy to conceive of a considerable amount of toll business between factories and offices, while the main portion of the population, being factory employees, a large or even good development ratio for local service could hardly be expected. Thus it is that before attempting to even roughly classify a town or area, the features liable to be influencing factors should be carefully observed and noted, as they will be effective through the course of the classification and development work. (To be continued.)

Farmers' Paper Prints Good Advice to Builders of Rural Telephone Systems.

A correspondent, in response to an inquiry by a subscribed as to "What Action Can the Grange Take to Establish a Telephone Service in Our Rural Districts?" recently contributed to the *Maine Farmer* the following:

Our system centers in a rural village of some six or seven hundred people, where we have an exchange, and an operator who handles one hundred and fifty telephones and two long distance lines to other rural centrals in adjoining towns. We also have connections at our central with an Independent trunk line. Our experience would seem to warrant the following conclusions:

1st. Build good substantial lines, always providing for future growth.

2d. Allow only fifteen to twenty telephones on each pair of wires, but get as many subscribers as possible, because every additional telephone adds to the value of every other telephone in that each subscriber has the advantage of a greater field to call on. So, in large neighborhoods, two or three pairs of wires should be strung from the central in order that central may not have difficulty in calling the subscribers and that messages may be transmitted readily.

3d. Try to get the business men of the town to go in with you so as to have the advantage of calling their stores as your needs may demand.

4th. Run clean wires from one central to another, so that through service may be had without interfering with the local lines.

5th. Use No. 10 wire, well galvanized, on the main lines, and No. 12 or No. 14, or copper wire, for the wires running from the main line to the house.

6th. Use telephones of the same make and strength throughout the entire service and get well-made telephones. These will cost from twelve to fourteen dollars apiece, but they will be the cheapest in the long run.

7th. At the organization of the company have adopted some by-laws which will cover your needs, and then go by these rules.

8th. Above all things, avoid friction in the service between subscribers, as the best way to secure a good service is by hearty co-operation of all the subscribers.

New Busy Signal.

A Rockford, Ill., newspaper, commenting on the damage done by squirrels to telephone cables, produces the following "literary gem:"

Hello Central, number 9—
Busy now, you say?
Yes, a squirrel is on the line,
Wait till he goes away.

The item goes on to say, ingeniously enough:

"The squirrels present one of the greatest problems to the Rockford telephone companies, and it may be that in time we will see stuffed bull dogs along the cables to act as scarecrows to the squirrels. The reason that the squirrels gnaw the lead cables is a debatable one, some students say the little animals wish to sharpen their teeth, some say that they are curious to see what is on the inside, and some nature fakers claim that they wish to hear the conversation that is always slipping through the leaden pipes. The telephone men aren't caring so much for the reason as the remedy. They know that each time a squirrel eats through a cable that the rain will come in and that a lineman will have to find the hole and put in a new wiped joint. The expense for each time a squirrel sharpens its teeth is figured at $10. The telephone companies don't object to dentistry, but they don't want to pay for it."

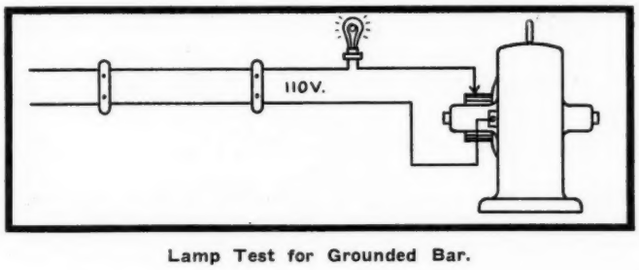
LETTERS ON PRACTICAL SUBJECTS

How to Locate a Grounded Commutator Bar.

A frequent source of noise on the subscribers' lines in large common battery exchanges is a charging dynamo which has a grounded commutator bar, or an uneven, dirty commutator. No noise will be produced on lines fed from a storage battery which is being charged from a properly built and connected dynamo if the machine frame is thoroughly insulated from ground, and the commutator kept clean and truly round. But frequently a perfectly clean and round commutator is productive of serious disturbance if one of the bars becomes grounded on the frame, either wholly or in part. The insulation may be partly broken down at some one bar enough to allow the static discharges to pass through readily, and, also, direct current flows every time the grounded bar passes under one of the brushes. The hum from the charging dynamo in some plants is very marked, while in others the effect is scarcely noticeable. But in every case the disturbance can be greatly reduced by keeping the commutator true and clean, the frame of the machine thoroughly insulated and the commutator free of grounds.

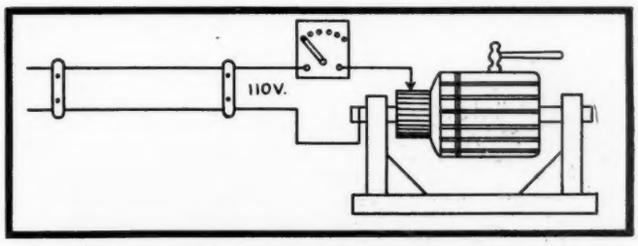
In order to ascertain whether the commutator is grounded or not, take out the brushes so as to leave the armature free to turn in the bearings, and without electrical connection to any outside circuits. Then connect one side of a source of power, at about 110 volts pressure, to the frame of the machine; connect the other side of the power circuit to one terminal of a 16 candle power lamp. Bring a wire from the free terminal of the lamp into contact with one bar of the commutator. The lamp should light to a dull glow if the commutator is grounded. Then revolve the armature slowly by hand, connecting the wire to one bar of the commutator at a time. When the wire comes in contact with the grounded bar, the 16 candle power lamp will light to full brilliancy. A chalk mark will then designate the bar and the armature should be removed and have the necessary repairs made on the commutator.

If the ground is a heavy one and the armature is wound with large size wire, the lamp will not vary greatly in brilliancy, perhaps not enough to be discernible to the eye. In this case the armature must, of necessity, be removed from the machine and placed upon suitable supports where it will be free to be revolved by hand. Comparatively strong current should now be applied, say from ten to fifteen amperes according to the size and capacity of the armature. One terminal of the source of power should be connected to the shaft, the other terminal applied to single commutator bars, one after another as the armature is slowly revolved on its support by hand. Hold a hammer or bar of soft iron on top of the armature, and



Lamp Test for Grounded Bar.

when a place is reached where the hammer or bar of iron is no longer drawn down tight on the armature the commutator bar on which the wire is touching at that moment is the grounded bar. The current now flows through the grounded bar to the armature shaft instead of through any of the windings of the armature, as previously when the source of power was fed to good commutator bars. This is true by reason of Ohm's law, as the path through the grounded bar is less in resistance than that through the coils of the armature, hence no current through the winding and no magnetism in that portion of the armature. With this test the commutator does not have to be unsoldered



Magnetic Test for Ground in Commutator.

from the leads in order to locate the grounded bar, and it has the additional advantage of not requiring delicate, costly apparatus to ascertain the seat of the trouble. Also the accuracy of the test is another point in its favor, as the grounded bar can be located beyond a doubt.

Minneapolis, Minn. A. M. Severson.

Damaging Effect of Atmosphere in Oil Country on Copper Lines.

I am located in a portion of Indiana which is in the heart of the gas and oil belt, and believing the effect gas and oil in the atmosphere has on copper lines may be of interest to your readers, I will explain some of the trouble we have.

The gas and oil laden atmosphere attacks metal of every kind, and forms a thuck crust upon its outer surface; this crust is almost a perfect insulator.

A copper line will work perfectly for about three years before any unusual trouble appears; we will then notice a noise which resembles a loose joint, constantly cutting out. When the trouble has been cleared, we find the cause to be in sleeve joints, such as several which have been removed from the center of a span at one or another point along the line. These appear to have been properly twisted, there being three complete turns to the sleeve, and the sleeve being the proper size. Upon inspection, these sleeves are found to have inside a heavy coating which insulates the two wires from each other.

I have taken sleeves from the line which have shown a resistance while still in the span, of five thousand ohms, and after being cut out of the line measured, when not under tension, four hundred thousand ohms. In one case a sleeve which had given trouble for quite a while by indicating open, after being located and removed was tested and measured several megohms; no amount of twisting and pounding would close this joint.

We have removed no less than one hundred and fifty of these joints within the past year, and the number is increasing constantly, without a remedy in sight.

The nickel plated parts on the telephones turn black after being in service six months.

Marion, Ind. A. T. Jester.

A New Way to Locate Transpositions.

A man employed in a town near the Mexican border by an Arizona telephone company had trouble in finding the cause of cross-talk between a toll line and certain local wires.

The company sent an expert to remedy the trouble, and the conversation which follows took place:

Question.—"How often is the toll line transposed?"

Answer.—"But once in five years, to my knowledge."

Tucson, Ariz. J. S. B. Andruss.

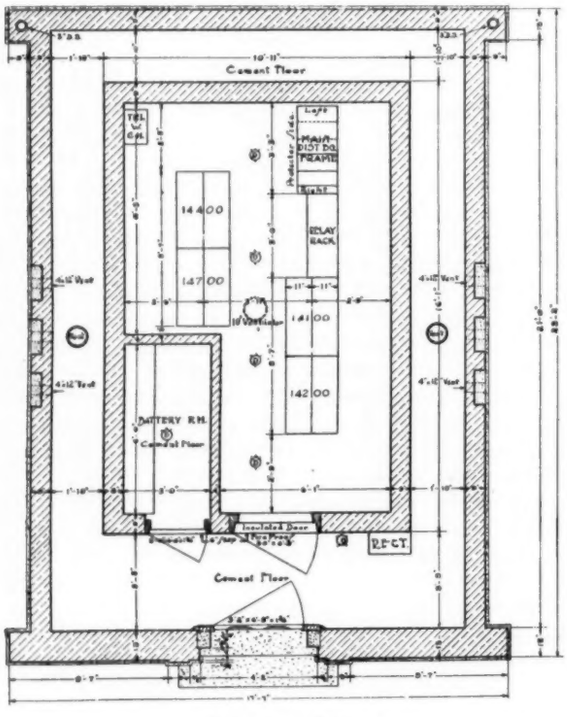
New Branch Exchange at Columbus, Ohio.

In line with the policy of the Columbus Citizens Telephone Company, of Columbus, Ohio, toward the development of automatic branch exchanges, it has recently completed and placed in operation two exchanges which are

Indianola Branch Exchange, Columbus, Ohio, Where Automatic Switching Apparatus of 400-Line Capacity is Housed.

something out of the ordinary, both in construction and equipment. One of the branch exchanges is located in what is known as Indianola, a residence section in the northeastern part of the city, while the other exchange is located in the northwestern section.

The Indianola exchange is shown in the accompanying



FLOOR PLAN
SCALE: ¼ INCH = 1 FOOT

Floor Plan, Showing Equipment Layout.

photograph and plan. The exchange was designed to take care of a new and high grade residence district, and has an estimated ultimate capacity of 400 lines. The building is an ornamental brick structure, with red tile roof.

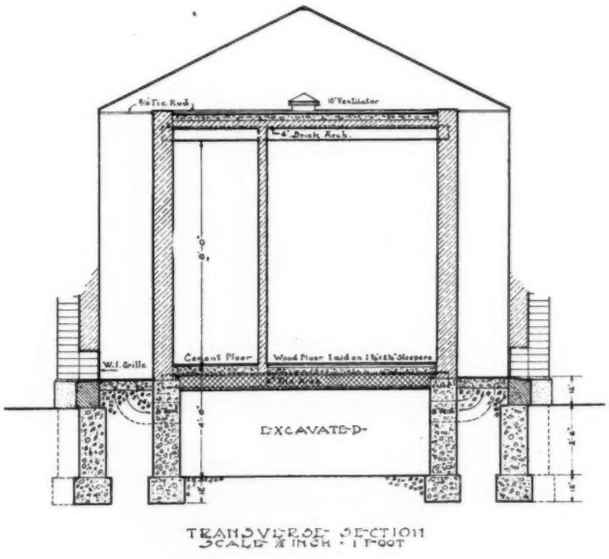
Both of the exchanges are erected at the rear of lots so that the value of the land required is very low. The Indianola exchange is built in a residence district, where careful restrictions as to the character of structures and entrances of business houses are in force. The structure compares favorably in appearance with the best houses, and out-classes all of the garages of that section.

The plans show an outer and inner building, with a passage way of twenty-two inches around the inner structure. The outer building is of solid brick, all placed with heads out and joints unbroken. The inner building is of hollow brick. The two structures rest on separate concrete foundations. The inner side of the outer walls and both sides of the inner walls, are plastered with a fire-proof compound and with cement. The idea of the double construction is to preserve as nearly as possible temperature without artificial heat and to prevent the entrance of moisture.

Within the building are at present two 100-line Keith line-switch units, with the associated apparatus. A separate compartment contains the storage batteries. There is no attendant at the exchange; all necessary attention is given to the switches on periodical visits of a branch exchange or main exchange switchman. Provision is made for testing the switches from the wire chief's desk of the main exchange.

In order to furnish heat for exceptionally cold or wet days, there is provided an electrical heater, similar to those used in street cars, which can be turned on or off from the main office. So far this season there has been little demand for such heat, but the degree of cost involved in such expensive form of heat may only be determined after the service has gone the round of the seasons.

The Columbus Citizens Company has also in operation an exchange of 100 lines in an underground vault. So far this season the apparatus has met the expectations of warmth and dryness, with only rare application of heat.



TRANSVERSE SECTION
SCALE: ¼ INCH = 1 FOOT

Section of Indianola Fire, Dust and Moisture Proof Building.

The officials of the company are understood to have found that an isolated branch exchange where the temperature is kept stationary and the moisture is excluded will operate satisfactorily with but little overseeing by a switchman at long intervals. The experiment in the two exchanges is to see how far the question of even temperature and dryness is secured by the use of the construction above described.

The managers of the Citizens Telephone Company are pioneers in many lines of development of the automatic system, and especially in the matter of saving money while furnishing the best service to the telephone users.

Railroad Wire-Crossings in Iowa.

The rules adopted by the Railroad Commission of Iowa for wires crossing railroads, which are the result of a conference at which electric light, railway, telegraph and telephone companies were represented, are now in force, all construction being required to be in conformity with them after January 1, 1909. The order requires that all poles sustaining wires which cross railroad tracks shall be of sound timber, cedar or better, with not less than 6-in. tops where more than two wires are carried, and not less than 5-in. tops in any case, and placed in the ground to a depth of not less than 5 ft., well tamped, braced and guyed if necessary, of sufficient height so that the wires shall not be less than 24 ft. above the top of the rails, after allowing for sag. The cross arms shall be braced with iron braces, and locust hedge or steel pins shall be used. Pin guards shall be attached to the ends of all cross arms where crossing poles are not in a straight line with the pole on either side. Crossing poles shall be braced or head-guyed, and such poles, braces or guys may be placed on the railroad company's right of way lands, but must not interfere with the safe operation of the railroad.

In line construction poles shall not be set farther apart than 115 ft. at railroad crossings, and in no case shall crossing poles be set nearer than 10 ft. from the nearest rail of the main line track, and shall be provided with double cross arms to be placed upon the poles in a gain of sufficient depth to maintain the cross arms at right angles to the poles.

In all cases where any wire-using company shall desire to place its wires under the tracks of any railroad company, it shall, at least five days before so doing, serve a written notice upon the agent of the railroad company at the station nearest to the place where such crossing is to be made. The wires, cables or conduits used in such crossings shall be placed at least 3 ft. below the bottom of the rails of the track.

Where it is impracticable to use poles at railroad crossings on account of buildings, cross-arm fixtures must be attached to the building with machine bolts passing through the wall. The use of screws or nails for fastening fixtures to buildings will not be allowed.

Where reconstruction of wire-carrying lines is made necessary to make them conform to these regulations, the expense of such reconstruction shall be borne by the party last occupying the ground where such reconstruction is made necessary, and each party shall make all reconstruction on its own lines, unless by mutual agreement.

In special cases where compliance with the above and foregoing rules would work a hardship upon any company in extending its wires over or under any railroad, or of any railroad company extending its railroad across the line of any wire-using company, application may be made to the board to make such order for crossing as deemed reasonable and just.

Telephone Used in Administration of Gigantic Model Farm.

The death of Oliver Dalrymple at Castleton, N. D., a few weeks ago, served to call attention to his great farm, which is understood to be the largest and most famous wheat farm in the world.

Mr. Dalrymple had long been noted as a leader in the development of modern methods of farming on a large scale. His largest farm, a tract of 30,000 acres, was separated into sections, each supervised by a mounted foreman, with a superintendent for each major division of 2,500 acres. Every division was equipped with its own buildings, teams and machinery, and was connected with headquarters by telephone. The telephone played a prominent part in the administration of this great tract, and to its use was attributed much of the success of the farm, which was extremely profitable.

Sensational Reporting.

Scranton, Pa., is another town that has a fool reporter. The reproduction is from an article in the Scranton Tribune. Any city editor who has had the advantage of

OVERCHARGED 'PHONE SHOCKS WOMAN AND SENDS BALLS OF FIRE ABOUT ROOM

Mrs. Eugene H. Cortright of Honesdale Has an Exciting Experience in Answering What Sounded Like an Urgent Call.

In answering what Mrs. Eugene H. Cortright thought was a call upon the telephone, yesterday, she escaped by only a narrow margin being electrocuted in her own home. The bell rang so loud that she likened it to a fire alarm and thought first it was that. It continued its loud ringing and Mrs. Cortright believed it must be an urgent call and hastened to take down the receiver. The 'phone proved to be so highly charged with electricity that balls of fire circled her head while others came out in the room. One shot across the kitchen floor and came in contact with a calico skirt which Mrs. Cortright had just finished ironing, and ignited.

Mrs. Cortright put out the fire, but feels the effect of the shock, her entire left side being almost paralyzed from the electricity. The extra voltage is claimed was caused by the telephone wires coming in contact with hanging ice-covered electric wires. Mrs. Cortright's condition is not serious.

Clipping of Sensational Article on Telephone Accident.

two or three years' attendance at high school knows that such a yarn as this is untrue, and a man of ordinary intelligence knows that printing these things frightens ignorant persons, and injures the business of telephone companies. But, since these items do get into print, from time to time, it shows the desirability of letting the newspaper men know that the place to get telephone news is at the telephone office. It pays to help the reporters get things straight.

Good Use of Telephone.

Mr. Joseph Eisendrath, traveling salesman for a large firm of garment manufacturers in Chicago, puts the telephone to a unique use in the prosecution of his business, says *The Transmitter*. On October 17, he appeared at public station in the Brown Palace, Denver, and handed in a list of something like fifty people in as many towns in Colorado, and requested that they be called as quickly as possible. Inside of five minutes he was busy answering calls, the responses coming in so fast that he was forced to call his two assistants to aid in talking to the called parties.

The toll manager was interested and reported what was taking place at the Brown. A representative of the company called on Mr. Eisendrath the next day and found him to be what is commonly known as a "live one." In the largest sample room in the hotel, he, with two assistants, was showing his wares to the outside merchants who were beginning to arrive in response to the invitation which they had received over the toll lines.

"It would be impossible for me to carry anywhere near my 5,300 samples and see my customers," said Mr. Eisendrath," if it were not for the telephone. I make only the largest cities and then call up my customers in all the surrounding district, inviting them to come in and inspect my samples. Of course, I pay all their traveling and hotel expenses, and even then I figure that my expenses would be tripled if I had to make all the smaller places in order to see the trade. My toll bills are at least ten hundred dollars a year, but I make several times that on the investment."

The Telephone in the Courts

Conducted by A. H. McMillan

Lack of Notice of Fallen Wire as Defense Against Liability.

I want to get your assistance in the matter of locating several decisions which bear upon a case that we have pending here. I have several times seen in your valuable paper reference to different decisions in different states, the gist of which were that when a wire of a telephone company would break down in the street and cause an accident, they were relieved of liability, if they did not have reasonable notice of its being down and failed to repair it.

Our case is this: A wire broke down in the street and fell across a primary light circuit, a little boy playing along the street took hold of it and was severely burned in his hand and on one foot where he stepped on it. One of our troublemen had passed this place, on his way to dinner, one one-half hour before and the wire was not down at this time. He only lived one half block from where the accident occurred, and as he went back from dinner, got there very soon after the little boy was hurt. Our defense in this case will be that we did not have notice of the breaking of this wire and, therefore, did not have time to repair it.

The case of Fitch vs. Central New York Telephone and Telegraph Company, 59 N. Y. S., 140, is undoubtedly one of the cases to which your allude. In that case the wire was broken by a fallen tree, and it was held to be one of those accidents that could not be guarded against except by constant patrol or inspection of the lines, and this no telephone company is bound to maintain. In your case, you did not state what was the cause of the wire falling. The writer does not understand that the lack of notice on the part of the telephone company is a defense where the wire fell through negligent construction or other fault on the part of the telephone company. See also Parsons vs. Charleston Electric Company, 48 S. E., 284, 69 S. C., 305.

Right to Use Grass Plot in Indiana.

We have a franchise of the streets and alleys of the town of ————, Indiana, to build and maintain a telephone exchange. We have been in operation since August 15, 1900, and the plant was built about seven years prior to the time we got hold of it, August 15, 1900. Now, we have notice served on us by a resident of this town to move and take away two anchors that are buried in his grass plot; one of these anchors has been in about 16 years, and the other one was put in about five years ago by a property owner's consent. These anchors support an open wire lead and 100 pair cable. The first anchor was put in long before the present property owner or the party that has given us notice, owned the property. The grass plot we speak of is a little strip of ground between the sidewalk and curb. Let us have your opinion or some citations of law, if he can compel us to move anchors. We think he cannot, as our franchise in taking in streets and alleys will include grass plots along the curbs, as that is where we set our poles.

We think your troublesome resident cannot compel you to move the anchors. It is the law in Indiana that poles may be erected in the public streets for the purpose of operating a general telephone system without making compensation to the owners of abutting property. McGee vs. Overshimer, 150 Ind., 127; 49 N. E., 951. In order to give him the right to compel you to move he would have to show that you did not have municipal authority for the work. Coburn vs. New Telephone Company, 156 Ind., 90.

Preventing a Disconnected Subscriber from Reconnecting.

Would you give us advice in the following case:

Originally, each subscriber built a section of line to connect with others similarly built, but when our company was formed each took stock in payment for their line. About seven months ago we raised the rates from $10 to $12 a year, and one stockholder refused to pay the increased rates, and also claimed the case was misrepresented to him when he sold his line for stock. We therefore gave him a bill of sale of his line, which is about a mile and a half from his residence, and took back our stock and cut him off, also building around his line and cutting it out. He soon afterwards attached his drop to our line at his residence in such a manner that it was only after a close examination that it was discovered, and attaches it as often as it is removed. Under the laws of this state, how should we proceed?

The proper proceeding is to get an injunction from a Circuit Court in Chancery restraining the subscriber from reconnecting with your lines.

Removal of Poles Declared to be Beyond the Police Power.

The first decision of the Railroad Commission of Wisconsin, declaring an ordinance null and void, was made in the case of Wisconsin Telephone Company against the City of Green Bay as an unreasonable exercise of the police powers.

The common council first passed an ordinance requiring the wires and poles of the telephone company on Broadway to be removed within sixty days or pay a penalty of $5 per day for failure to do so. The change would necessitate an expense of $12,000, as the wires would either have to be removed into the alley or placed underground.

"Under the ordinance the company was placed in the position of either being forced to neglect its duty to the public by interrupting the service of the existing lines and thereby causing incalculable inconvenience and damage to the public or to submit to an accumulative penalty during the period required for the work demanded by the ordinance beyond the time limit allowed" says the commission's report; "Obviously such legislation is not a proper exercise of the police powers delegated to that municipality and cannot be allowed."

Suit to Compel Advertisement and Sale of Telephone Franchise.

At Frankfort, Ky., the Court of Appeals has reversed the judgment of the Jefferson Circuit Court in the case of the Louisville Home Telephone Company against the city of Louisville. This is the case involving the application by the Louisville Home Telephone Company and John Coleman against the city of Louisville and the Board of Public Works for a writ of mandamus to compel the board to advertise and sell at public sale "a certain telephone franchise claimed to have been provided for by an ordinance of the General Council."

After referring to various authorities upon the question of the right of appellants to sue for the writ, the court says:

"This court is of the opinion that the appellants are proper relators in behalf of the public to apply for the writ of mandamus sought in this case. The enactment of the ordinance of the character of the one presented was clearly within the province and power of the General Council of the city."

South Dakota Cities Cannot Grant Franchise.

The Circuit Court of the United States for South Dakota, sitting at Sioux Falls, in that state, has held that city has no right to either grant or withhold the use of its streets by a telephone company. When the franchise of the Dakota Central Company, granted it by the city of Huron in March, 1898, for ten years, expired, the city sought to force the company from the streets and the company resisted. Judge Carland, of the Circuit Court, holds that the telephone company was given the franchise to maintain lines in the state by the legislature of South Dakota; that the city of Huron has no legal right whatever to grant to the telephone company a franchise nor the power to either refuse or consent to the company placing poles and wires upon its streets.

Use of Coupons Illegal in Minnesota.

The attorney-general's department, of Minnesota, has held that the Northwestern Telephone Company cannot continue to sell reduced rate telephone coupons without violating the laws of the state. The company asked the attorney-general if the selling of coupons good for $10 to $25 worth of talk at a reduction of 10 to 25 per cent from the usual rate were lawful.

The opinion of the attorney-general was based upon Section 1 of Chapter 449 of the General Laws of 1907 which, as far as material, provides as follows:

"Giving of passes by railroads, etc, prohibited.

"Section 1. From and after Jan. 1, 1908, it shall be unlawful for any person, association, co-partnership, or any representative thereof, to offer, give, or in any manner furnish to any person, either for himself or another, any free pass or frank, or any special privilege or reduction in rates withheld from any other person for the traveling accommodation or transportation of any person or property, or the transmission of any message or communication."

The statute also makes the selling of the coupons at a discount a criminal offense, subjecting the company to punishment by a fine not exceeding $100, or by imprisonment for a period not exceeding ninety days. It also provides that any person using the coupons is equally punishable by a like fine or imprisonment.

The first question passed upon was whether the toll coupons are special reductions in rates withheld from any other person, and this question was answered in the affirmative. The opinion stated that it clearly appeared that a different toll was charged by the telephone company as a public service corporation for several services furnished an individual in the usual course of business, from the toll charged for the identical service furnished a holder of toll coupons with discounts noted in the schedule. Discrimination, in fact, was found to exist in favor of coupon holders as against persons not holding them. The next question discussed was whether this was justified because the privilege in rate is not withheld from anyone who desired to comply with the terms offered. On this question the department held that the use of the coupons was not justified by the latter fact, citing the following cases: Hays & Company vs. The Pennsylvania Company, 12 Fed. 319; Western Union Telegraph Company vs. Publishing Company, 14 Neb., 326; Providence Coal Company vs. Providence & Worcester Railroad Company, Interstate Commerce Commercial Reports, 109; Kinley vs. Buffalo, N. Y. & P. R. R. Co., 37 Fed., 181; The Control of Public Utilities (Irvine & Mason), p. 274, et seq.

Upon the receipt of the information, the Northwestern Telephone Company immediately discontinued the sale of the coupons at a discount.

Retaliation for Disconnection Enjoined by Court.

About four years ago, the South Harbor Creek Telephone Company built a line to the village of Harbor Creek, Pa., and entered into an agreement to carry a pair of wires for one Thomas J. Wells, who wished to be connected with a local line at Harbor Creek, he to have a telephone in his house, and to furnish a certain number of poles in return for the privilege. In 1904, the South Harbor Creek Telephone Company organized as a co-partnership, and established a central office at Harbor Creek. In 1908, it incorporated as a telephone company and took over the rights of the previous co-partnership. Mr. Wells had connection at the hotel in Harbor Creek with the Union Telephone Company's lines running to Erie, Pa., and the South Harbor Creek Telephone Company had the same connection. A year ago, the Union Telephone Company turned the territory over to the South Harbor Creek Company. Under the influence of the Bell people, it is alleged, those persons, including Mr. Wells, who had their central at the hotel, had the South Harbor Creek Company's rented telephones removed, and attached wires and put in telephones where the South Harbor Creek Company had removed its telephones. The South Harbor Creek Company then served notice upon Wells and his associates to remove their telephones. On their refusing to do so, they were disconnected. Wells then cut the wires of the South Harbor Creek Company. He was arrested three times and bound over to the court for appearance at the February term. He persisted in cutting the wires after being twice arrested and the South Harbor Creek Company applied for an injunction. The case was tried in the Court of Common Pleas of Erie county, and a decision given in favor of the company.

The judge, after reciting the facts, found that the defendant, Wells, never had any ownership in the telephone line, except as to his two wires used thereon; that the company had the right to construct and maintain its line along the public road, and that the defendant had no right to destroy it. The court characterized the conduct of Wells as a repeated and wanton trespass, without color of right, and granted a permanent injunction in favor of the telephone company, restraining Wells from any further trespass, and decreeing that he pay the costs.

Practical Questions and Answers

Singing of Receiver Against Transmitter.

I should like to know what causes the whistling sound some telephones produce when the receiver is placed over the transmitter. Not all telephones will do that, and those that do make a feeble noise or none at all when the battery becomes weak. Is there any way the whistling propensity may be eliminated without injuring the telephone? Some people take a wicked pleasure in causing their telephones to whistle when others are using the line, and if there is some way the noise may be stopped I should like to know it.

When the receiver is placed against the transmitter mouthpiece, and a little noise started, the transmitter vibrates. This makes the primary current undulate, inducing a current in the secondary of the induction coil. This induced current goes through the receiver, making its diaphragm vibrate. This makes a noise, which acts on the transmitter diaphragm, and augments its vibration. This in turn causes more induced current in the receiver, which reacts on the transmitter to sustain the sound. We might say that the sound and electrical waves travel around in a closed path, through transmitter, coil, and receiver. It is a test of a good telephone to make it sing in this way. Any means taken to prevent it will result in weakening the loudness of transmission. By some peculiar coil arrangements this singing can be eliminated, but they are not practicable for regular exchange use. No matter what you do, the evil-minded person will find some way of annoying others.

Noise from Polechanger.

We have a magneto board and use a Warner polechanger for ringing. In taking the receiver off the hook on party lines we get the noise of vibration very strong, which is annoying. How can I remedy this?

If you will look into the arrangement of the wires leading from the polechanger to the switchboard you may find the trouble. They should be run in twisted pairs, if possible rubber covered wire, and should be kept as far away from all

other lines as possible. Also, in running them inside the board, keep them away from other circuits, though, of course, you will have to get pretty close in the keyboard. Even there I would not lace them into the same cable with other circuits, but run them separately, and from the opposite end of the shelf. If this is done, and the insulation maintained high, you will have a minimum of noise, though sometimes it is impossible to eliminate it entirely.

Ground Return Lines in the Country.

We have just bought a 17 mile old country line with iron wire, Nos. 10 and 12, used ten years. The lines are grounded, series party lines. Having been used to common return and metallic systems, we do not understand the grounded system very well. There is no induction from trolley or light wires, except when these country lines are connected with the city, where metallic is used. (1) Why isn't a grounded line as good as any other on a country line about five miles long? The earth is a good conductor, takes no pin room, doesn't pull a pole out of line, never breaks, doesn't have a bad joint, and costs little. (2) What telephones, series or bridging, would you use on such a line with, say, 10 or 12 on a line? (3) What advantages have metallic circuits in such a country system over grounded? Common return over grounded? There would be perhaps six lines from the same direction on the same arm. (4) What size wire would you use for common return if copper-clad steel wire No. 16 is used and if common return is used? (5) Would 1,000 ohm ringers in bridging telephones be O. K.? (6) Could grounded lines be used into the same exchange for long lines and short private lines with metallic or common return for other lines by using repeating coils? These people seldom talk out of the county, so that we need not figure on equipping them simply for long distance. They talk 75 miles now with good service.

(1) Grounded lines are capable of giving very good service if there are not too many of them close together. But the grounded line is never as good as a metallic circuit because of cross-talk and the disturbances of thunder storms and unsettled weather conditions. Further, you can never tell when a power circuit or a trolley line is going to strike your territory, so it is well to be ready for them now. "The earth doesn't have a bad joint" is not quite correct. The contact of ground rod and earth is a form of joint, and it is very frequently bad.

(2) Use bridging telephones. The series telephone simply will not do.

(3) Metallic circuits are capable of being made free from cross-talk and other noises, and can be connected to toll lines without a repeating coil. Common return has little or no advantage over grounded for a country system, as the cross-talk will be practically as bad with one as the other. An ungrounded common return tends to keep off noises from foreign currents, like earth current and lightning, but may be only partly successful even in this.

(4) The size of the return will not affect cross talk from

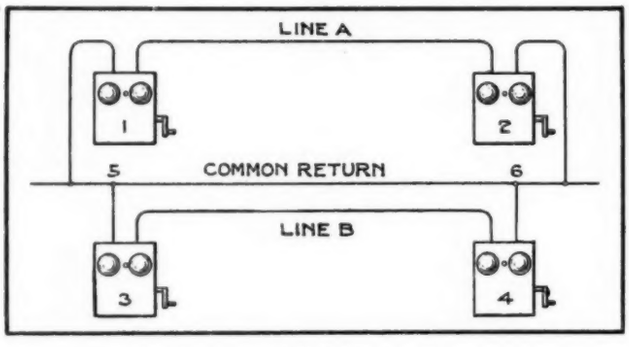


Fig. 1.

electrostatic reasons, nor will it affect noises from other lines or atmospheric conditions. It may give rise to cross-talk by shunting part of its current to other lines. Fig. 1 shows the condition. If line *A* is talking and *B* listening, most of the curent which leaves telephone 1 over line *A* and passes through 2, will return over the common return. But a portion of it will leave at 6, pass through 4, line *B*, and 3 to 4. If the resistance between 5 and 6 were zero, no current would leak through line *B*. How large may the resistance of 5 to 6 be without causing noticeable cross-talk? Tests have indicated that for the conditions represented in Fig. 1 one-tenth ohm is a safe limit. Hence, choose such a size of wire as will have a resistance of one-tenth ohm or less for the length which you will have on your common return. Where there are many telephones all returning by the same common return wire the latter may have a larger resistance (hence the wire may be smaller) because much of the current leaks back through all the other telephones, and being split up into many small currents is not noticed. But since you have so few lines, the above figure will hold. This will doubtless figure out such a large wire as not to be practical. We do not favor common return for country lines.

(5) 1,000 ohm bells are good, but 1,600 ohm bells are better.

(6) Yes, grounded, common return, and metallic circuit lines can be worked together by the use of repeating coils in the cord circuits. Perhaps if the equipment and lines were better, the people would learn to talk farther, thus increasing your toll receipts.

TO WIRE CHIEFS AND MAINTENANCE MEN.

Clearing of troubles which occur in your exchange, inside or outside, may be made the subject of short, practical letters which will interest other telephone men These TELEPHONY *will gladly publish, if illustrated by diagrams or photographs. Simply write a description of the nature of the trouble, tests and location, cause found, and method of repair. Payment will be made for all letters published.*

Ringing Past Bridged Impedance.

In the January 23, 1909, number of TELEPHONY the question about "Ringing past bridged impedance" was well answered, except the suggestion to increase the voltage of the ringing generator. It is more amperage that is wanted instead of more voltage. Some years ago I changed the ringers on our private line from series to bridging, rewinding the old coils with finer wire, all I could put on. The resistance varied from 1,000 down to 800 ohms. When this was done and the wiring changed in the box from series to multiple, there was considerable trouble in ringing. Some told me the generators were too low voltage and advised me to wind with finer wire and more turns. I did not try this, however, but took the coarse wire from the bells (No. 31) and wound the armatures over with that. In some of them the resistance was as low as 70 ohms. After this the bells would ring all right with 25 telephones on the line with a dozen receivers down. The line was short, only about five miles long. I have tried 5-bar generators warranted to ring through 100,000 ohms on this line and found that they would not ring the bells nearly as well as the old series 3-bar generators with the coarse wire. I tried the experiment of winding over one of the 5-bar generators with coarser wire and one-half the turns and it would ring all the bells on three lines, 40 in all, with several receivers down.

The facts stated by the correspondent as resulting from his experiments are true, but do not apply to the case which was treated in the issue mentioned. Magneto hand generators necessarily have considerable internal resistance and reactance and it is this which cuts down their ringing power. Most power generators and pole changers used at central offices have very small internal resistance, so that it is ordinarily not considered. Hence, while ringing a line, the terminal voltage is not very much reduced. When seeking to increase the flow of current (amperes) in the bells on the line, we may either reduce the resistance and reactance through which that current must flow, or increase the voltage applied. Either will give increased current. The voltage of a pole changer or power generator can be greatly increased without materially affecting the total impedance of the ringing circuit, bells and all. But to rewind a magneto for higher voltage introduces so much extra resistance and reactance that no increase of current results, often a reduction.

Telephone News

New York Wants Telephone Companies Put Under Anti-Trust Law.

The need of maintaining competition as a regulative factor in the telephone business is recognized in a bill, to be introduced in the New York legislature by Assemblyman Stern, to bring telephone and telegraph companies under the operation of the anti-trust law. The bill is said to have been prompted by a recent opinion of the Wisconsin attorney general, declaring that telephone and telegraph companies did not come under the anti-trust law, because they did not deal in commodities.

New Physical Connection Bill in Texas.

The subcommittee from the Texas Committee on Private Corporations, of which Representative Ray is chairman, has prepared a substitute for the telephone connection bill by Messrs. Terrell and Ray. This bill differs from the one to be offered in the senate in that instead of placing the telephone companies under the Railroad Commission it empowers the Commissioners' Courts of the several counties to adjust the rates. The bill also requires all local and long-distance telephone companies to make connection so that messages may be transferred from one line to another.
other.

Bill for Telephone Valuation in Nebraska Senate.

Senator Ollis' bill for the physical valuation of railroads and telegraph and telephone companies, after being placed on the general file of the Nebraska senate for consideration in the committee of the whole, was considered at a meeting before the senate session, adopting several amendments agreed upon by the committees of the house and senate, and then the committee unanimously voted to recommend it for passage,

Chairman of Wisconsin Utilities Commission Denounces Competition.

Dr. B. H. Meyer, chairman of the Wisconsin Public Utilities Commission, is reported to have made the following statement, in a public address:

"If there is one thing above all others which the history of the utility business has established, it is that competition as a guarantor of good service and a regulator of rates has failed. The verification of this simple truth has cost the people of this and other commonwealths untold millions of dollars. The spirit of the utilities law is that wasteful competition and useless duplication of plants shall cease. It is conceivable that public convenience and necessity may in certain cases, due to obstinacy, bad management or other causes, require the construction of a competing plant, but such cases should be very rare, indeed, or, better still, they should never be permitted to occur. It would be nothing less than an economic crime to attempt to reopen the door to competition in the utility business with a mistaken notion that through such action the public will secure better service at lower rates."

Apparently Dr. Meyer has not yet made a careful study of the telephone business. It would be well for him to do so before making further statements on the subject of such a sweeping character as the one quoted. It is only after broad-minded study in a wide field that one is enabled to lay down statements of principles of such vital importance as that relating to the value of competition. Telephone men may be gleeful or downcast at the fact that Dr. Meyer has announced this opinion, according to their business interests, but the real feelings of the majority will be tinged with disappointment that a gentleman of such high attainments as Dr. Meyer should be led into stating views for which, at least so far as they concern the telephone business, he will find it impossible to show a substantial foundation. Anything which savors of "snap judgment," or of letting real issues slide by under cover of the dust raised by the "publicity expert," will do much to discourage people who have been firm friends of the principle of regulation by state authority.

Louisville Investigator Finds That Competition Goes With Reasonable Rates.

At a mass meeting held in Louisville, Ky., on Feb. 1, several hundred indignant citizens gathered to voice their objections to the rates of the Cumberland Telephone & Telegraph Co. In a report presented by Mr. Victor Englehard, former president of the Commercial Club, and chairman of the committee of the Commercial Club, which called the meeting, is found in the following:

"By comparison with rates prevailing in other cities, we find that where the Bell System has a monopoly, rates are as high as the people will stand without revolt. Where there is local competition and the Bell System controls the long distance service, the rates of the Bell System are much higher for business telephones, and nearly equal for residence telephones. Where there is local competition and both companies have about equal long distance service, low rates prevail for both companies for business and residence telephones."

Anniversary Dinner of American Institute of Electrical Engineers.

The American Institute of Electrical Engineers will celebrate the completion of its first quarter of a century with an anniversary dinner at the Hotel Astor, New York, March 11. The annual dinners of the Institute have always been extremely successful, while the historical character of this affair promises to make the occasion more than usually interesting. President Ferguson has appointed Mr. T. C. Martin chairman of the dinner committee; the other members appointed being as follows: T. Beran, M. Coster, M. M. Davis, H. A. Foster, G. A. Hamilton, R. T. Lozier, W. McClellan, F. A. Muschenheim, H. W. Pope, C. W. Price, F. A. Scheffler, E. A. Sperry, A. Spies, A. Williams, G. H. Guy, secretary.

Telephone Manager Killed on Account of Collection Argument.

At Aline, Okla., on February 1, N. M. Jacobs, manager of a hotel, shot and instantly killed A. L. Strohl, telephone manager, as a result of a quarrel. The killing took place over a small telephone debt.

City Official Endorses Telephone Competition.

In a communication to a local paper at Ottawa, Kan., where the question of consolidation has been brought up in connection with an application of the Independent telephone company to raise rates. Councilman E. L. Warner says:

"I do not believe that conditions would be bettered by a consolidation of the two companies, or by the absorption of one by the other. The element of competition is quite as important in this as in any other business. If we are

willing to grant a higher rate for service to the Bell or whatever company survives, why not offer the same opportunity to both of the companies that we have?"

Suit on Berliner Patent Near Decision.

After 14 years of litigation, the trouble between the American Bell Telephone Company, and the National Telephone Manufacturing Company is near an end. Findings in favor of the Bell company have been reported to Judge Colt of the United States Circuit Court in Boston by Robert P. Clapp, auditor.

The report is on the suit brought by National company against the Bell company for malicious prosecution.

This grew out of infringement proceedings relating to the Berliner telephone patent which the Bell company instituted against the National company in August 1895. The latter won this suit, but had been obliged to suspend business soon after the proceedings were started.

It then sued the Bell company, alleging that the latter had instituted proceedings for the purpose of driving the National company out of business, though it did not have a good case at bar.

The auditor finds that the prosecution was not malicious, for in his opinion the Bell company had reasonable and probable cause for believing that the National company was infringing on the Berliner patent.

He also finds that the National company sustained injuries to its business, but was unable to fix the extent of this because of lack of evidence on that point.

Bell Company Works for Competitors.

At Denver, Pa., the joke is on the rural line promoters of the Bell company.

During the last three months three rural telephone lines organized through the efforts of agents of the Bell company have been formed among farmers, between Lititz and Manheim. In each instance, according to parties interested, the farmers were to erect the lines, maintain them, and furnish the instruments, purchasing them of the Bell factory. Several of the farmers on the proposed lines were rather dissatisfied with the terms, and upon being approached by representatives of the American Union Telephone company, decided that it would be more to their advantage to connect with the Independent lines.

Ohio Convention, Columbus, March 18.

The date of the opening of the annual convention of the Ohio Independent Telephone Association is Thursday, March 18. The program of the meeting, and other features for discussion, make it probable that the meeting will be even larger, and more significant than past gatherings of this active organization.

Classification of Telephone Property in San Francisco.

The Pacific Telephone and Telegraph Company has acknowledged receipt of notice that the San Francisco Board of Supervisors early next month will begin an investigation looking toward the establishment of telephone rates for the next fiscal year. Accompanying the acknowledgment is a statement asked for by the Supervisors showing the revenue and expenses of the San Francisco exchange for the year 1908.

For the first six months of the year the total receipts of the exchange were $1,045,633.01, while its expenses were $797,484.39, leaving a net revenue of $248,148.62. For the last half of the year the receipts were $1,073,783.11, and the expenses $804,663.12, leaving a net revenue of $269,119.99. The total net revenue for the year was $517,268.61.

The total investment claimed by the company is $7,218,269.82, which is divided and classified as follows: Pole lines, $285,461.53; right-of-way, $37,877.30; aerial cable, $348,371; aerial wire, $285,963.75; underground conduit, $1,244,246.04; underground cable, $1,432,759.13; equipment, central office, $1,111,780.58; equipment, subscribers' stations, $883,985.57; tools and teams, $48,650.79; office furniture and fixtures, $22,623.96; general supplies, $121,981.06; real estate, $929,479.12; construction in process, $15,089.99; municipal franchise, $450,000.

A Result of Competiton at Little Rock, Ark.

In an open letter published last week in the *Gazette*, Little Rock, Ark., Douglas Heard states that "It is a well-known fact that when this company first installed their system they required the subscribers to pay $5 per month and to sign a year's contract and pay for it in advance. And it was contended by them, before they had competition, that it was impossible to render the service for less than $5 per month; but when a competing system began business they reduced their residence rates to the marvelously low figure of $1 per month, and their office, or business rate, in proportion."

Bravery of Telephone Operator Shown in Chicago Fire.

Miss Mae Donnelly, a 17 years old branch exchange operator of Chicago, risked her life last week when a $500,000 fire nearly destroyed a Wabash freight house.

While the little room in which the telephone switchboard is placed became filled with smoke, Miss Donnelly called the fire department and notified all the officials of the road she could reach that the warehouses were afire. Then she called up every yardmaster in reach to send engines and move out freight cars containing almost $1,000,000 worth of freight. The engines came and the cars were moved to safety before the fire could damage their contents.

Finally, when the flames had entirely consumed her hat and purse, which lay on a chair near the switchboard, Miss Donnelly fell in a swoon, overcome by smoke. As she dropped from her stool to the floor she screamed once, and that scream was all that saved her life.

Two clerks heard the scream and rushed to the switchboard, where they found the unconscious girl. Not five feet from where she lay a partition of the room was in flames. She recovered quickly when brought into the open air.

The bravery and devotion to duty of this operator won the most hearty praise from the Chicago newspapers, and from thousands of people who read the statements in the press.

Independent Enterprise Commended in Portland, Ore.

An editorial in the *People's Press*, Portland, Ore., gives the following strong endorsement of the Independent telephone service:

"The success which the Home Telephone Company has attained in Portland has arisen from actual merit, and every one who has had occasion to use its service cannot but mark its superiority over the old rival corporation, the Pacific States Telephone Company, both as to speed in making connections, clearness in the transmission of messages and the courtesy of employes, together with prompt attention to any complaints or needed repairs to the line. No one who has ever used the 'Home' telephone will ever have the 'Pacific' installed in its stead, for even at this present day people are wondering how it was that they got along without the automatic telephone for so long a time prior to its introduction to Portland.

"The Home Telephone Company has now completed its long distance service to Seattle, and whatever of praise has been said of the local lines, the long distance service is a revelation! The long, tedious waits for connections which seem necessary in the use of the Pacific telephone, no longer exist, and there is an absolute absence of that dis-

agreeable buzzing or purring in the ear, which in the bygone days was such an annoyance. Twice during the present week the *People's Press* had occasion to use the Home long distance service to Seattle, and each time connection was obtained with the party at the other end of the line in less than half a minute, while the conversation carried on was as distinct and the voices as readily recognizable as though only a few feet instead of hundreds of miles separated the parties.

"No words of praise are sufficiently adequate to describe the enterprise and pluck with which the difficulties and obstacles that had to be faced have been so successfully overcome while bringing to a state of perfection their long distance service. With this company the spirit seems to be that nothing is too good, as long as its patrons may secure better service."

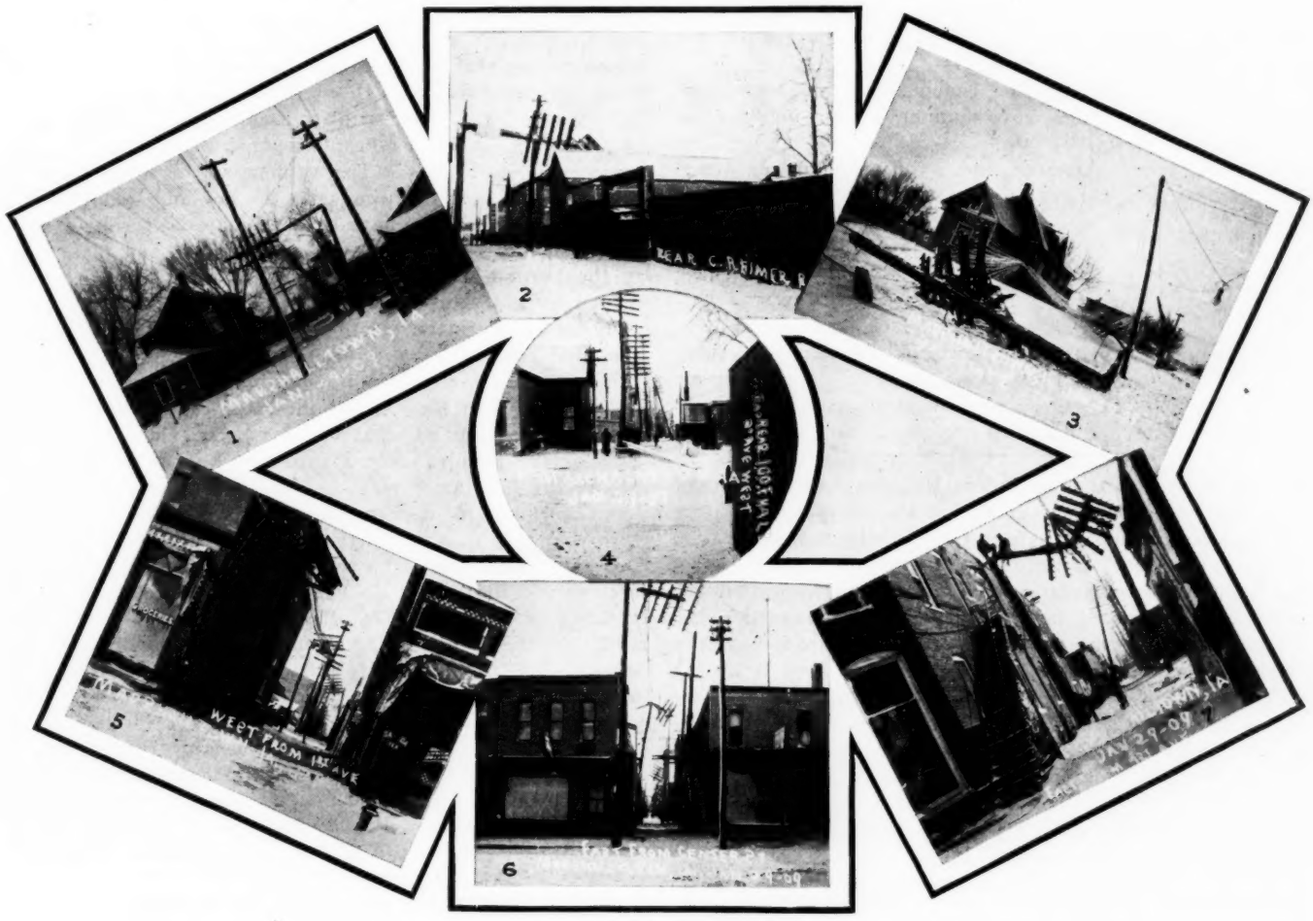
Housekeeper Objects to Telephone Advertising.

The Rochester N. Y., *Union and Advertiser* prints the following, which may well serve as a suggestion to managers who are inclined to encourage use of the telephone for all conceivable purposes:

"My telephone is far more of a nuisance to me than it is a convenience," said a housekeeper yesterday, "and I think I will have it removed, if I am called up as much in the future as I have been during the past week by theater agents, and business firms, who abuse the telephone privilege, using it as a means of advertising. My hands were busy moulding bread yesterday morning, when I heard the bell ring, and upon responding was told by a woman just gone into business in a Main street building, that she had a fine line of curtains, and other hangings, which she would like me to see. Shortly afterwards an employee of a firm making extracts, solicited my patronage in the same way, and though I told him that I did not wish to be annoyed again, by being called to the telephone to hear of the extracts, the afternoon brought another call from the same firm. Last week a number of my friends and I heard over the telephone of a Shakespearian actor who was to fill a long engagement here, and we were asked by an attache of the theater to please get our seats early, as there would undoubtedly be a rush for tickets. These are samples of a telephone annoyance that I would like to be freed from."

Sleet Damage at Marshalltown, Ia.

Damages to the wire plant of the Marshall Telephone Company, of Marshalltown, Ia., from a recent sleet storm were estimated at $10,000. The fact that the principal damage was to the old Bell wires, and that these, in falling, brought down wires erected by the Marshall Telephone Company is worthy of note. By the purchase of the Bell plant, after the Bell company had acquired a controlling interest in the local company, the Marshall Telephone Company arrayed itself with the enemies of its former Independent allies. Truly, the way of the transgressor is hard!



AN ACT OF RETRIBUTION.

Storms, Fighting Battle for Independents, Destroy Bell Plant at Marshalltown, Ia.

1. Bell 50-ft. Poles; 2. A Typical Break; 3. Marshall Telephone Company's 40-ft. Poles and Cable Down for Four Blocks; 4. Bell Lead Blown Across Alley and Hanging Suspended from Wire of Marshall Telephone Company; 5. Bell Lead Looking West from 1st Ave. The 69-ft. Ring Top of the Marshall Company Weathered the Storm; 6. Nos. 4-5-6 and 7 on the Same Lead Between Main and State Sts.; 7. Office Cable Pole, 50-ft. Pole Lead Carrying Cable.

Management of United States Telephone Company Invites Co-operation of Stockholders.

With a view to increasing the personal interest of the numerous stockholders of the company in its operations, the following letter has recently been mailed from headquarters at Cleveland by the management of the United States Telephone Company:

"In looking over the list of the Independent telephone stockholders, we find your name.

"Believing you to be interested with us in the upbuilding of the Independent telephone business, we wish to direct your attention to a few facts with which you may not be familiar.

"The long distance lines of the United States Telephone Company reach more people in the States of Ohio, Indiana, Michigan and Western Pennsylvania than those of any other long distance company.

"The lines of the United States Telephone Company connect with more than 300,000 Independent subscribers in the State of Ohio alone, and are connected by means of direct copper metallic circuits with the above-named states.

"The service on the lines of the United States Telephone Company is unexcelled.

"Knowing the above facts, you can help your own company, first, by using our long distance service yourself; second, by instructing those employed in your business to do so, and third, by enlisting the co-operation of your friends.

"You can further help us by informing the management here of any difficulty you may have at any time on account of your long distance service.

"If the stockholders of the Independent telephone companies will assist in the above manner, we can increase the business very materially.

"Inviting your assistance and awaiting your reply and with kindest personal regards, we are,

Very truly yours,

Jas. S. Brailey, Jr.,
President.

C. Y. McVey,
General Manager."

This is undoubtedly an attempt to put relations on a more personal and friendly basis, which will be appreciated by the stockholders at once, and even more as time goes on and demonstrates the practical efficacy of the plan.

Sentiment Turns Against Public Utilities Law in Kansas.

It has just been discovered that the Kansas legislature has been barking up the wrong tree with its "administration public utilities bill" in an effort to live up to the tenets of the Republican party platform. The "Administration" public utilities bill is aimed largely at telephone companies and the railroads. During the public utilities debate it has been constantly asserted that whether members liked it or not they must favor the public service commission law, because it was in the platform. This assertion was frequently made and never denied. Now it turns out that there is not a word in the platform with reference to a public service commission.

There is nothing in the platform that can be construed as approving a public service commission. The only sections that could possibly have any bearing on the subject are the following:

"We hereby pledge ourselves to an appropriation suffi- for the control by the state of the issue of all stocks and bonds by public service corporations limiting such issues to the value of the property owned by such corporations.

"We hereby pledge ourselves to an appropriation sufficient to ascertain the value of property owned by public service corporations."

This is all there is in the platform on the subject. Now it has already been determined not to make an appropriation sufficient to determine the value of the property owned by public service corporations. The experience in Wisconsin shows that such an appropriation would have to be several hundred thousand dollars, and nothing is now more certain than that the legislature will not redeem that section of the platform.

Apparently, nobody in the legislature has known that the assertion that the platform called for a public service commission was untrue. Of course, a law providing for the control of the issue of stocks and bonds would naturally be a law putting certain power in the hands of the charter board and that would be all there would be of it. But no such bill has been introduced.

It now seems quite likely that the public service bill will fail even in the house. The judiciary committee is divided in it five against and seven in favor. But it is generally known that the seven who voted for it thought they had to on account of the platform of last August. The talk is now that if anything goes through it will be some measure confined to cities of the first class.

Under the caption of 'The Kansas Utilities Law" the Kansas City Journal takes editorial cognizance of the alleged need of a utilities commission, saying:

"Kansas has no more need for a utilities commission than a cat has for a pocket. Kansas is a rural state made up of farms and small towns. It is proposed to create a commission of five men to "regulate and supervise" all the numerous little water plants, light plants, gas plants and telephone plants that are having a hard enough time to make both ends meet as it is.

"'Because New York, with its great cities, needed a utilities commission it has been assumed that there was the same need in Kansas. The assumption is simply absurd. Wisconsin is experimenting with the law and spent $65,000 on it last year. There have been no material results except the raising of a few rates. The law would add materially to the burden and expense of the utilities plants, whether owned by cities or by private parties, and could not possibly be of any material use to the people. The law takes the final control away from the little towns and invests it in a commission to be appointed by the governor.

"Not a city in Kansas has indicated that it desired this change. No demand whatever has been evidenced on the part of the people. Not a paper in Kansas advocated it before the legislature met. About the only argument that has been made for it is that it was in the platform. It now turns out that it is not in the platform. Even if it were in the platform it would be senseless to pass it if there was no demand for it and no need for it. The idea that the meeting of the candidates in August is the real legislature and that the so-called legislature is a mere formal body, whose duty it is to ratify what was done in August, is absurd.

"Fortunately, there are strong and conservative men in the senate, like Senator Price and Senator Porter, and in the house, like Representative Buck and Representative Davis and others, who understand that the legislature is a deliberative and representative body and that the people expect the members to ascertain the facts and use their judgment."

Public Utilities Legislation in Ohio.

After a number of hearings, which were held rather secretly, the Wood public utilities bill, a measure pending in the Ohio house of representatives, was reported out favorably Monday afternoon at the re-convening of the general assembly after a recess of three weeks. The bill provides for the establishment of a public utilities commission empowered to regulate all public utilities corporations, excepting railroads, which are included under the railroad

commission law. The law also provides for the supervising by the commission of all stock and bond issues, the taking of testimony and the supervising of bookkeeping. It also provides for a taxing method which is not objected to by the managers of telephones and other public utilities corporations.

The final hearing in committee was had Monday morning when a number of opposing interests were heard. Frank L. Beam, president of the Ohio Independent Telephone Association, and Attorney John E. Todd, represented the telephone interests. Mr. Todd made a strong argument against quite a number of the features of the bill. The bill was placed on the house calendar and will be taken up on the floor where it will be fought to the end.

It is not believed that in case the house passes the measure it can be enacted in the senate, which is considered a more conservative body.

Cumberland Must Quit Mt. Vernon.

The Common Council of the city of Mt. Vernon, Ind., has instructed the City Marshall to notify the Cumberland Telephone Company (Bell) to remove all the poles and wires on the streets and in the alleys of Mt. Vernon within the next thirty days.

The trouble dates back to the old franchise quarrel which has been continuously up before the Council since the first of January, 1906.

It is not likely that the corporation will comply with this order and a law suit is the probable outcome of the tangle.

Telephone Saves Village from Destruction by Fire.

A local telephone system was mainly responsible for the saving of the little village of Ketchum's Corners near Saratoga Lake, N. Y., from total destruction by fire on February 9. The village had no facilities for fighting fire, but the neighbors for miles around were summoned by telephone to the village. A bucket brigade was organized and the loss confined to a dwelling house and two large barns with minor damages to other buildings.

Rural Telephone Operators of Mahaska County, Ia., Organize.

The rural telephone lines of Mahaska county, meeting at Oskaloosa, Ia., perfected a permanent organization with the following officers: President, A. J. Lytle; vice-president, J. A. Jones; secretary, W. H. Sarbaugh; treasurer, Hamilton Barnes. Two thousand subscribers were represented by over 200 delegates, and every phase of the business was thoroughly discussed. The Bell telephone company made strenuous efforts to get the rural business, but the convention voted to continue with the Home Telephone Company as long as the present satisfactory service continued.

Raises Rates Because of Sleet Storm Damage.

For the first time on record, damage from a sleet storm has been made the occasion for a raise in telephone rates.

At the February meeting of the directors of the New Ulm Rural Telephone Company, New Ulm, Minn., held last Monday, it was decided to increase all telephone rentals 25 cents per month. The action was taken because the recent severe storm caused a damage to the lines, by blowing down poles and wires, variously estimated all the way from $3,000 to $4,000, the damage being confined almost entirely to the country districts. Some of the directors suggested levying an assessment, but this would have been illegal and could not have been collected. No provision had been made for a sudden loss nor was there a fund created of any great amount for depreciation. A number of stockholders advocated a raise in rentals two years ago in order to create a reserve fund to pay for unlooked for losses and certain depreciation, but the advocates of the plan were given no support and the company drifted along with no provision for a rainy day. The increase at this time will be of very little immediate relief. Business telephones will cost $2.25, residence telephones $1.25 and rural telephones $1.25, being a raise all around, which will give the company an additional revenue of about $275 a month or $3,300 annually. The new rates will go into effect March 1, 1909.

German Business Men Resist Measured Rate Introduction.

Telephone rates have become an acute issue in Berlin, Germany, where practically the entire business community is up in arms against a bill which has been introduced in the Reichstag providing for an increase in the charges. The bill proposes to abolish the present system whereby Berlin subscribrs got practically an unlimited service for the lump sum of 180 marks ($43.20) a year, substituting an annual rental charge of 100 marks ($24) for telephones with an additional fee of 4 pfennings (1 cent) for every connection made. The bill affects all Germany, but its provisions would be felt especially in Berlin, where it is computed that the result would be the raising of the average annual cost of business telephones to 300 marks ($72) or 400 marks ($96) or even in the case of some firms to 600 marks ($144). The bill has provoked a storm of indignation and business men are demanding its defeat.

New Telephone Association in Minnesota.

The Southeastern Minnesota Telephone Association was organized Jan. 22 at Rochester, Minn., the following officers being elected: F. S. Haines, Rochester, president; F. C. Marvin, Zumbrota, vice-president; R. C. Cutting, Chatfield, secretary, and H. M. Tollefson, Kasson, treasurer.

The above with M. A. Williams, Lewiston; Otto Troost, Jr., Winona, and J. E. Keane, Pine Island, to act as executive committee.

The object of the association, as stated in the constitution and by-laws, is for mutual protection, to settle disputes and to "get together." One peculiar thing about the association is that about half of the members are sub-licensees of the Bell and the rest have Independent connections, which include all the locally owned exchanges, including some Farmers' Mutual companies. The direct cause of this organization is said to have been dissatisfaction with existing relations between local and long distance companies.

Hereafter the long distance contracts will be laid before the executive committee before being signed by the local company.

At the first meeting many long-standing fights and misunderstandings were adjusted.

Charges for Town and Rural Service from Farmers' Line Telephone.

An interesting point in the matter of telephone service was decided a few days ago by the Nebraska railroad commission. In the town of Edison resides a butcher named G. W. Burt, who has in his shop a telephone attached to the Farmers Union Telephone system. In the town itself is another system, operated by the Edison Telephone Company. The latter has an arrangement with the Farmers company, by which connections may be made between the two companies upon payment of a switching charge of 25 cents a month, while that of the Farmers' line was much less. Burt offered to pay the 25 cents a month switching charge. This would give him service to all subscribers of the Edison company, but at a less rate than $1.75 a month. The Edison company refused to let him practice this economy. He applied to the commission for an order compelling it to carry out the agreement with the Farmers company respecting his

telephone. The commission rules that it cannot do this, because this would give him cheaper service than that furnished by the town company to other subscribers, thus constituting discrimination. No contract, it is held, could be invoked to compel this being done.

The commission also passed upon a request from the Farmers & Merchants Company, of Alma, to be allowed to permit patrons to use a pay telephone at the railroad depot without charge, while non-patrons must pay. The railroad company has a telephone in the station also, and the thrifty folks of Alma have been using it in preference to paying for the use of the other one. The request is denied on the ground that the use of the telephone must be open to all persons on the same terms, whether they are patrons of the company or not.

Edison Working on New Transmitter.

Some weeks ago the statement came from certain railroad offices that Thomas A. Edison has been making good progress on a new telephone which he is perfecting for use particularly on dispatching circuits. A few days ago a representative of TELEPHONY saw Mr. Edison, and when this subject was brought up, Mr. Edison stated that the report is broadly correct, and that he is now working with excellent results on a transmitter of extraordinarily sensitive type. His idea is to improve the pronunciation and enunciation. He considers present transmitters very defective in most cases, and called attention to the frequency with which people have to get names and words and figures and letters of the alphabet repeated over and over again. He stated that he had already secured splendid talking, and would soon have the apparatus ready.

Not only on account of Mr. Edison's remarkable success in contributing to the advancement of every branch of industry which he has touched upon, but by reason of his invention of the original successful transmitter, telephone men will look forward eagerly to the time when a more definite announcement of his present work can be made.

Marion Case to Be Heard March 1st.

The famous case of the State of Ohio versus the Central Union Telephone Company and the Marion Telephone Company to oust them from their charters on the grounds that their combination a year ago was in violation of the Valentine anti-trust law of the State of Ohio will be submitted to the circuit court in Franklin county March 1. Attorney Cyrus Huling, representing the Ohio Independent Telephone Association and the United States Telephone Company, together with other counsel, will assist the attorney-general.

Considerable interest attaches to the case, as upon its decision hinge a number of other agreements made between Independent companies and the Bell interests in Ohio providing for interchange of messages and taking over of long distance business by the Central Union company.

Navy Wireless Telephones.

Lieutenant Sweet, of the Navy, in testifying recently before the House Committee on Merchant Marine, said that the wireless telephones installed on the battleship fleet works satisfactorily in some instances, but unsatisfactorily in others. He said that he had carried on conversation over the wireless telephones a distance of 12 miles.

Associated Press reports, dated Washington, D. C., Feb. 15, state that "Unsatisfactory results have been obtained in the use of the (De Forest system) wireless telephone apparatus installed on board the vessels of the Atlantic fleet before it started on its cruise around the world, by the Radio Telephone Company. It is probable," says the dispatch, "that the apparatus will be removed from the ships. It has had a thorough test by the officers of the fleet under all conditions, and their reports indicate that on rare occasions has it been of any service."

Telephone Saves Farmer's Property from Fire in Pennsylvania.

Reports from Hanover, Pa., state that a few days ago the two-story dwelling of Isaac Cromer, near Humbert's school house, between Littlestown and Silver Run, was burned while Mr. and Mrs. Cromer were absent from home. Their son, John, was alone, when he discovered the fire, which had caught from the chimney of an outbuilding. He at once called the Littlestown telephone exchange and had all neighboring farmers who had telephones on a rural line notified.

They hurried to his assistance, and through their prompt aid, most of the contents of the dwelling were saved and the flames prevented from spreading to adjacent buildings.

Oklahoma Supreme Court Decides that Railroads Must Have Telephones in Stations.

The supreme court has sustained an order of the corporation commission requiring railroads to maintain telephones at all of their depots, holding that the telephone is an indispensable aid to the conduct of the business of a common carrier at any center of population.

The Enid telephone case involving the control of the commission over telephone rates, was remanded for the purpose of requiring the commission to seek out certain facts and certify them back to the court, no decision being made as to the issue involved.

Regulation by Competition in a Michigan Town.

Testimony as to the effect of a prospect of competition in stirring things up in favor of the public is again apparent from the following item taken from the Augusta, Mich., *Beacon*:

"The Bell company, some time ago, secured a goodly number of patrons here by the promise of service between Augusta and Battle Creek. A few months ago the company saw fit to deprive their patrons of free service from Battle Creek to Augusta. This action caused many of their patrons to order out their telephones and organize a local company to connect with the Citizens company at Battle Creek.

"The Bell people evidently took it as a joke for a time, for they offered no inducement to win the people back until after a contract had been made with the Citizens company and material ordered for new lines.

"This week, however, it is evident the Bell people are exceedingly active for them. They have gladly resumed free service both ways between Battle Creek and Augusta, and their representatives are hustling around trying to discourage the people from going into the new company.

"It is said that if you order a Bell telephone in today you will not have to wait two or three months for it, for there will be a man at your house before breakfast tomorrow morning ready to put it in.

"The material for the new company's line began to arrive yesterday and the work of construction will begin at once."

Telephone Conditions in a South Dakota County.

In a talk given at the recent convention of the South Dakota Independent Telephone Association, Mr. W. B. Wilson, secretary of the Wessington Springs Telephone Company, mentioned several interesting points he has observed in conducting his company's business in Jerauld county. He said:

"The company in which I am interested owns and operates the exchange in Wessington Springs, a town of about

1,000 inhabitants, where we are using something over 200 telephones. We also operate 14 country lines with an average of 16 telephones to a line. Our system has been in operation five years, under the same management all that time.

"There are farmers lines all around us, but as yet no serious attempt has been made to replace our lines with farmer service. In fact, in some neighborhoods the words 'farmer line' is a synonym for poor service, over-crowded lines and general debility. Many of its farmer supporters are beginning to find out that cheap service is in many cases no service at all, and do not now begrudge the small extra amount necessary to get better service. At best a farmers line is somewhat of a makeshift and is far from satisfactory.

"One of the chief causes of trouble is the breaking of our rural line by hay stackers, thrashing machines and house-moving outfits. These people are not exactly malicious, but are decidedly careless, and a little wholesome legislation on this line would be appreciated.

"One of the most trying and common things to put up with is the practice of 'rubbering' and fooling on the rural lines. The man who can prevent this useless waste of time, will confer a lasting favor on all the telephone fraternity."

Telephone Patents

Conducted by Max W. Zabel

ELECTRIC TERMINAL CLIP.

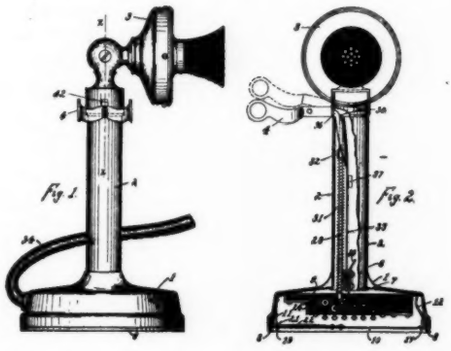
W. E. Dow, Braintree, Mass., patent 911,032, Feb. 2, 1909.

The electric terminal clip described in this patent has serrated jaws adapted to engage the terminal post, and upwardly bent flaring projections designed to stiffen the clip. The right hand end of the clip is riveted to the cord retaining portion.

DESK TELEPHONE.

E. R. Corwin and C. A. Bals, Chicago, Ill., patent 911,866, Feb. 9, 1909. Assigned to Corwin Telephone Manufacturing Company, Chicago, Ill.

This desk telephone has a number of novel features, one being the bar 29, which is actuated by the switch-hook. The



bar 29 operates springs in the base, which are mounted on the plate 9, held in place by the spring clips 11, 12. The cover plate 10 is also held in place by the spring clips. Pins project through the plate 9 to engage the springs in the base. The long, flat spring plate 35 is hinged at its upper portion, and acts in conjunction with the switch-hook and the bar 29 to control the circuit connections.

TELEPHONE SUBSTATION SET.

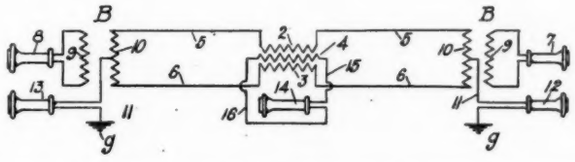
O. Frazier, Brazil, Ind., patent 911,714, Feb. 9, 1909. One-half assigned to Wm. Frazier, Brazil, Ind.

This telephone substation set is designed to provide a plan of wiring by reason of which the talking qualities are amplified. The various parts in the substation set are connected in the ordinary manner, but, in addition, an induction coil having the primary and secondary in series is bridged across the transmitter and receiver. This is claimed to increase the efficiency of the transmission.

PHANTOM ELECTRIC CIRCUIT.

H. B. Stone, Providence, R. I., patent 911,774, Feb. 9, 1909.

The phantom system here shown consists of the metallic telephone circuit having the receivers 7 and 8 and the second of phantom telephone circuit having receivers 12 and 13. A repeating coil is inserted, having three windings, respectively, 2, 3 and 4; 2 and 3 are in series with the line conductors of the main telephone circuit, and are wound in such manner that for metallic conversation they neutralize each other. The third winding, 4, is not affected by metallic transmission over

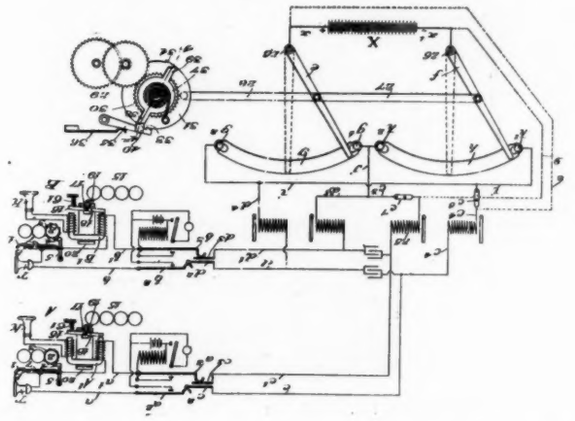


the line conductors 5 and 6, but when the line conductors 5 and 6 are used in parallel, the cumulative effects of coils 2 and 3 inductively energize the coil 4.

SUBSTATION TELEPHONE METER.

C. M. Beatty, Rochester, N. Y., patent 912,268, Feb. 9, 1909. Assigned to the Telechronometer Co., Rochester, N. Y.

This patent is designed to provide a registering system at the substation for recording the number of calls that are made, and also the length of time of conversations, both calling and answering. This is done by having a ratchet wheel 2, which is rotated one notch whenever the receiver is replaced on the hook lever. The induction coil A^1 also serves to operate the counting mechanism 15, which registers the time consumed, and this counting train relay is energized periodically during



the conversation by the resistance devices *e* and *f* at the central station, which gradually increase and decrease the pressure periodically, it being found advisable to make this increase and decrease of the pressure gradual, in order not to injuriously affect the instrument while talking.

TELEPHONE EXCHANGE SYSTEM.

Wm. A. Wynne, Raleigh, N. C., patent 911,798, Feb. 9, 1909.

This invention is designed to cover a complete telephone exchange system, in which the subscriber, upon initiating a call, is immediately placed in communication with the operator's telephone circuit. The devices operate through the agency of the line signal controlling means, and in conjunction with two relays, one of which connects the subscriber's line to the operator's set, and the other of which acts as the ordinary double cut-off relay.

In the Manufacturing Field

Intercommunicating Telephones.

The Stromberg-Carlson wall and desk telephones shown here clearly exemplify the possibility of designing unique types of instruments for intercommunicating systems having ultimate capacities of twenty and thirty regular stations, respectively, and each with a trunk line connection to a distant exchange. Installations of ten station systems using telephones of correspondingly decreased proportions are more common than these, but systems employing telephones of these greater capacities have proven practicable for intercommunicating service in large office organizations, such as are found in banking and mercantile institutions.

Considering the operation of inter-connecting one station with any other, the important mechanical feature of these telephones is the "push button" key provided with either 12, 22 or 32 key buttons for the three capacity instruments. The key operates when mounted in any position; but, for the sake of assistance in describing its parts, consider it mounted at present in a vertical position, as shown in our illustrations. Extending outward right and left in pairs, from each row of key buttons, in a horizontal position, are the main contact springs terminating just beyond the key base in free view. Both main operating springs which engage a plunger bushing

The 20 Station Wall Telephone with Detachable Switchhook.

that comes down between them, and the inner pointed platinum contact springs, mount in sets on edge in milled hard rubber strips paralleling the rows of key buttons and are fastened securely in this position to the metal key base plate. The object of this construction is to provide positive action betwen plunger and contact springs and permit a direct single connection betwen the cable conductor and the contact springs to be connected. The ends of the main contact springs extending beyond the key proper are formed in such a manner as to make a neat and strong screw terminal, which eliminates soldered connections and provides one contact point between the cable conductor and the key. Telephones with rows of terminal punchings mounted in the woodwork require a connection from one side of a punching for the incoming cable conductor with a connection from the other side, by a short terminal wire to the key spring, affording three times the chances for trouble, considerable more time to "connect up" each instrument and much confusion in the appearance of the assembled apparatus.

In the key box or wall telephone the switching device is mounted independent of all other parts in the backboard, which add absolute free access to a very simple design of key. There are no spiral springs or delicate parts required to operate the tumbler plate which shifts with the depressing of any key button, which is held until automatically restored upon depressing another button to call a different station. The ringing button, which works independent of the tumbler plate, is the last button at the left side of key.

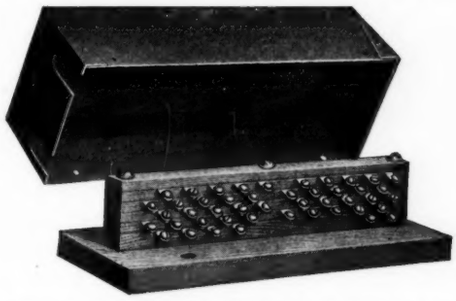
A convenient feature for marking designations opposite the key buttons is provided with this design by the removable strips mounted under the removable escutcheon plate. A piece of bristol board that will fit in a typewriter and a strip

The 30 Station Desk Telephone, Complete.

of transparent celluloid of the same size, are fastened by the same screws. The paper slips may be removed without taking off key buttons.

Metallic circuits are employed for all the various kinds of service it is possible to operate with these telephones. If the maximum distance between any two stations be 1,300 feet or

less, the ringing battery from dry cells should have a potential of about 12 volts and the talking battery about 9 volts. By operating the Stromberg-Carlson intercommunicating system on a slightly higher voltage, and employing small battery wires in cabling, the expense for this part of the equipment is decreased and much better and more positive operation assured.



A 13 Pair Terminal Strip with Dust Proof Cover for Use with Intercommunicating System.

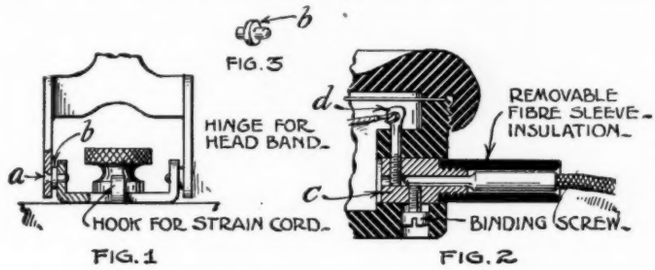
Protected terminal strips for junction points in the cabling system are recommended for the most complete systems. The improved terminal is of the sectional design using hardwood strips impregnated with an insulating compound and made interchangeable.

Intercommunicating telephones of the type here mentioned are manufactured by the Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., for common battery systems consisting of two or thirty regular stations and one or more trunk line connections. The same standard apparatus for the talking circuit is used in these sets as for local and long distance service. A detachable switchhook furnished with the wall telephone is a unique feature. These telephones in three sizes are more fully explained in literature especially written for the purpose by the manufacturers.

A New Operator's Receiver.

Many receivers heretofore manufactured, have been found wanting in one respect or another. A good many troubles have arisen, among which might be noted excessive weight and unsanitary head bands, which short circuit the receiver terminals when thrown back; fittings which are continually catching in the operator's hair; exposed metal parts improperly insulated from the circuit; no provision for attaching strain cord or protecting the conductors; trouble in removing and replacing cord tips; failure to securely fasten all parts to the shell; no provision for using standard cord tips; loss of magnetism; difficulty in remagnetizing, etc.

After carefully studying every pattern on the market and noting all of the objections that could possibly arise, the Dean Electric Company has produced a new head set, which has lately been placed on the market. The weight has been cut down by omitting all unnecessary material. The new head band is both sanitary and serviceable. By properly comparing the magnets and windings, the efficiency has been brought up to a remarkably high point. Furthermore, the permanency of the magnets is assured by employing a special imported steel, the same as is used in standard precision voltmeters and ammeters.



Some Details of the Dean Receiver.

The most permanent feature—the head band—is constructed from spring steel which is covered with vulcanized rubber. This material gives a remarkably elastic and durable finish, and one which may be cleaned with a damp cloth. This feature obviates the great objection to the interchange of head gears among operators. As shown in Figs. 1 and 3, provision is made for attaching the head band to the receiver. Instead of using a plain or shouldered pin for a pivot, a special turned piece is made from solid stock as illustrated by *b*. One end of this pin is riveted into the band at *a*, while the other forms a pivot. When once assembled, this construction is permanent and the hinged portion securely holds the pin in place even when loosened through rough usage.

Another valuable feature is the cord binding post, which is designed to take a standard cord tip and keep all metal parts entering into the circuit, completely insulated. A fibre sleeve is threaded over the end of the binding post *c*, Fig. 2, so as to enclose the body of the cord tip and thoroughly insulate it as well as to keep it from becoming bent through rough handling. The binding screw can be reached from the outside of the receiver casing without removing the ear cap, and its head is set below the surface of the rubber a sufficient distance to prevent the operator's hand from coming in contact with the circuit.

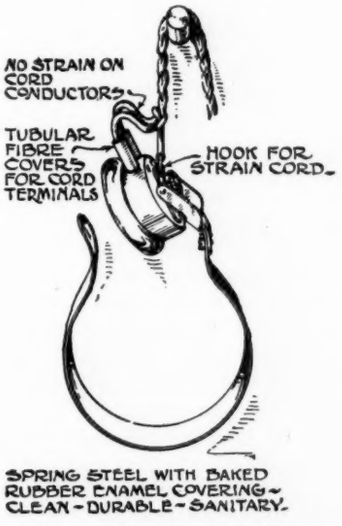

NO STRAIN ON CORD CONDUCTORS
TUBULAR FIBRE COVERS FOR CORD TERMINALS
HOOK FOR STRAIN CORD
SPRING STEEL WITH BAKED RUBBER ENAMEL COVERING
CLEAN - DURABLE - SANITARY

Fig. 3. The Dean Receiver.

Another detail which is appreciated by the exchange manager, is the hook which is formed in the back of the case for holding the strain cord. This permits the receiver to be hung up by the cord without damaging the terminal connections and does away with one of the largest items of cord maintenance.

The outer case is made very strong from hard rubber of heavy cross section, while the current carrying parts are insulated from the surface, so that it is impossible for the operator to receive electrical shocks.

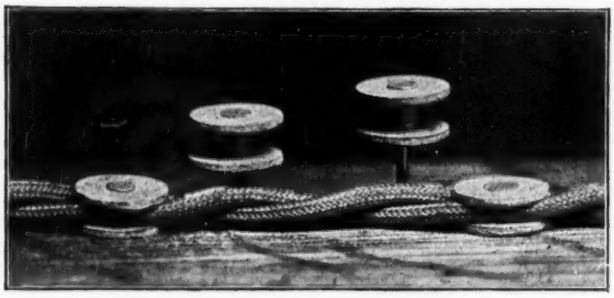
Everything considered, this new receiver is a typical Dean product, made with a view of obtaining the highest efficiency and the reduction of the maintenance cost to the lowest limit.

The Wire & Telephone Company of America, Rome, N. Y., has issued its regular annual pamphlet "Copper History." It shows the monthly and yearly average prices of copper from 1883 to the present time. This is not only exceedingly useful information to the telephone manager and purchasing agent, but it in such convenient form that the company is receiving many requests for it.

The Eureka Fibre Insulators and Nails.

F. W. Pardee, 52 Fifth avenue, Chicago, has been appointed general sales agent for the Eureka Supply Company, manufacturers of the well-known Eureka fibre insulators and Eureka insulated nails.

These insulators are claimed to be superior for all inside installations of insulated wire. They are said to be particularly well adapted for use with duplex telephone wire. The method of installing is to open the loop in the twisted pair, place the two wires between the washers of the insulator and then drive. This is a very quick method of installing and is particularly advantageous in bad places, such as ceilings, casings, etc. The installer can put the tacks in place between the wire, then pull the wire tight with one hand and drive with the other.



The Eureka Fibre Insulators.

With Eureka fibre insulators in use, the wires are not forced together under one staple against the wood-work, but are separated and rest on a thin fibre disk, which is a great advantage in case of dampness.

Various lengths are furnished, one of which can be used to advantage in plaster. A strong feature with the Eureka insulated tacks and nails is that it is claimed they can be driven as hard as desired without breaking the heads, thereby leaving a sharp point to come in contact with both wires and cut through the insulation.

Mr. Pardee will be glad to send samples of these insulators and nails upon request.

J. H. Montague Leaves Ericsson Company.

The many friends and the telephone public in general will no doubt be surprised to learn of the resignation of Mr. J. H. Montague, as sales manager of the L. M. Ericsson Telephone Manufacturing Company, of Buffalo, N. Y., to take effect at once.

Mr. Montague is one of the "old school" in Independent telephone circles and numbers his friends by the score, having been engaged in the game since the year 1899-1900, during all of which time he has been connected with the Ericsson interests, first as the only salesman traveling for the Ericsson company, later as office and confidential man, and, since the completion of the Buffalo factory, as general sales manager.

During all of these years, Mr. Montague has remained loyal to Ericsson interests, and it is only justice to him to mention that, in a large measure, he was instrumental in influencing the Ericsson people to build their factory in the United States.

Mr. Montague was the first successful Ericsson salesman and for a number of years was practically the only one traveling for this concern. His territory was the United States, and with few exceptions, every imported switchboard sold in this country was the direct result of his ardent and conscientious labors.

In Mr. Montague the Ericsson company will lose a man whom it will be hard to replace, for while he is of retiring disposition and modest mein, he holds the confidence of everyone with whom he has had dealings. A man of such energy, who makes friends so easily and with such a fine record behind him will readily make himself a valuable asset to any business with which he may become connected.

Mr. Montague has not advised us of his future intentions, but we venture the hope that he will continue in the Independent telephone field, and bespeak for him ultimate success in whatever business he may engage.

The North Electric Company's New Salesman.

Mr. O. P. Reed is now special representative of the North Electric Company west of the Mississippi river.

He began his telephone career in 1897 with the Cumberland Telephone & Telegraph Company. After serving three years with this company he resigned and accepted a position with the Home Telephone Company of Birmingham, Ala., as switchboard man, in which position he remained until 1902. After some time with the Stromberg & Carlson Telephone Manufacturing Company, in the installing department, he went with the Sterling Electric Company. In 1907, while in charge of sales in Ohio for the latter company, he resigned and went South for the Dean Electric Company. Later he was transferred to its Kansas City branch office, where his work attracted the attention of the North Electric Company. Acting under the direction of the Kansas City branch house Mr. Reed will look after special business in this territory, including work connected with the introduction of the new Automanual system. With his thorough knowledge of large telephone plants he is well equipped for his new position.

An Insulated Portable Lamp.

For years telephone men have been looking for a thoroughly practical portable lamp, which could be used about the switchboard and power apparatus without the risks attendant upon a lamp enclosed in a metallic guard.

Benjamin's fiber hand portable lamp, made by the Benjamin Electric Manufacturing Company, 42 West Jackson Boulevard, Chicago, has many good points to recommend it as superior to the ordinary lamp carried on a handle, but enclosed in a metallic guard. The use of a portable lamp without a handle about switchboards has long since been given up in every company which makes any claims at all to keeping itself up to date, owing to risk of breakage, damage from heating insulation of wires and woodwork against which the lamp rests, etc.

The Benjamin Insulated Portable Lamp.

The metallic covering which has hitherto been extensively used has made itself objectionable in many ways. Among these may be mentioned its insufficient protection to the user, which has been demonstrated in numerous cases where

workmen have suffered slight shocks, or even been dangerously injured owing to defective wiring of the electric light circuit, and faults in the lamp circuit. When used in working on the multiple or cross-connecting rack the metallic guard of the lamp is continually short-circuiting or grounding the wires, so that fuses are blown or other troubles arise which delay the maintenance force, and interrupt service more or less extensively.

The same objections to the metallic lamp guard are found in connection with work about the dynamos and motors, power switchboard, storage batteries and fuse board. All of these objections are overcome by the use of a lamp protected by a suitable insulating covering.

Benjamin's portable lamp has all exposed parts of insulated material, the handle being of black enameled wood and the lamp guard of hard fiber, with the ribs radially disposed so as not to interfere with illumination. The utter impossibility of bringing the hand lamp in contact with a metallic portion of the lighting circuit, or of making any connections between exchange apparatus and the lamp covering is a strong recommendation in its favor. Add to this its durability, and it will be seen that it fulfills economically a real and important need, which is felt in many parts of the exchange.

The Wire & Telephone Company of America Discontinues Western Agencies.

Announcement has been made by the Wire & Telephone Company of America, Rome, N. Y., that it has discontinued its Western sales agencies, and business will no longer be handled by Mr. F. W. Pardee and the Durant Electric Supplies Company of Chicago. In future the company will handle its western business directly from Rome, N. Y., but its traveling representatives will cover the entire country.

The purpose of this order is to not only facilitate attention to the requirements of the company's large western business, but will enable the factory to have a more intimate knowledge of the needs of its western customers.

All communications relative to the company's products are requested to be sent to Rome.

The Addie Fuse Tester.

A new device for testing fuses has just been placed on the market. It is small, neat and compact so that it can be used on a pole, with one hand, as easily as on the ground. As shown in the illustrations the device consists of a handle having two fingers, a connecting cord and a cell of dry battery. The fingers are insulated from the handle and each other, and are connected to the cord conductors. They are pivoted and are adjustable so as to spread far enough apart to reach the terminals of any length of fuse. When

The Addie Fuse Testing Outfit.

not in use the fingers can be folded back on the handle, whose overall length is 7½ inches and weight 4½ ounces.

In the broad part of the handle is located a buzzer which is in series with the dry cell and fingers.

To operate the device, the fingers of the tester are spread to the proper width, so as to make contact with both ends of the fuse. If the fuse is good, the low resistance buzzer in the handle will operate, giving a distinct buzz. If the buzzer does not operate when the fuse terminals are touched, the fuse is defective, and should be replaced.

In exchange work, the fuses on an entire distributing rack can be tested in a very few minutes, whether they be mica or enclosed fuses or heat coils. It is claimed that all the

The Addie Fuse Tester in Use.

fuses in a can top can be tested in three minutes, using only one hand.

On account of its simplicity, compactness and utility, this tester will undoubtedly meet with great favor among up-to-date telephone men. It is manufactured by the Electric Specialty Company, of Cresco, Ia.

THE HARVARD ELECTRIC COMPANY, Chicago and New York, has begun the year 1909 with numerous evidences of growth. Its president, Frederic Greer, is one of those who predict great things for the coming era of prosperity.

The company has recently greatly increased its space and more than doubled the capacity of its plant. It manufactures Harvard patent channel steel brackets, beveled edge wire joints, sectional switch boxes, conduit boxes, telephone fuses, lightning arresters, fuse wire, fuse strip, open fuse links, magnet winders, cable hangers, portable lamp guards, test connectors, etc.

The No. 17 bulletin illustrating a part of the products of the company has just been issued and distributed to the trade and a copy will be forwarded to any one interested, upon request.

THE PEIRCE SPECIALTY COMPANY, Elkhart, Ind., reports its business for 1908 the most prosperous in its history. It also reports a larger addition to its list of users of Peirce "all steel" brackets, etc., than in any other year.

Mr. C. L. Peirce, Jr., the founder of the business, is still actively originating new ideas in construction material, and keeping his company in the front rank as engineers and designers, as well as manufacturers. His company has had the same experience that most other pioneers have had to contend with, of having business pirates attempt to profit by the Peirce ideas and pioneer work; but Mr. Peirce feels he can afford to smile as he reviews the past and reflects on what the future will bring forth.

THE DEAN ELECTRC COMPANY, Elyria, Ohio, reports the sale of a two-section common battery multiple board of 560 lines, with 50 magneto line equipments to the Yankton Telephone Company, Yankton, S. D. The order includes a wire chief's and chief operator's desk, main frame, relay rack, power plant and 500 telephones.

Condensed News Reports

Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems

PERSONAL.

MR. H. F. BARBOUR has been promoted to the position of general manager of the Alpena Mutual Benefit Telephone Company, of Alpena, Mich.

MR. EDWARD GODDLING of Eau Claire, Wis., has been promoted to the managership of the Wisconsin Telephone Company's exchange at Stanley.

MR. CARYL A. STROPAUGH of Three Rivers, Mich., has been appointed manager of the exchange of the Southern Michigan Telephone Company at Mendon.

MR. M. A. ERSKINE of Atlanta, Ga., has been appointed manager of the Asheville Telephone and Telegraph Company with headquarters at Asheville, N. C.

MR. JAS. BONELL JR., formerly manager of the exchange of the Wisconsin Telephone Company's exchange at Stanley, has been promoted to the same position at Menomonie.

MR. J. T. KNODE of Corry, Pa., has been promoted to the position of district superintendent for the Consolidated Telephone Companies of Pennsylvania, with headquarters at Connelsville.

MR. R. E. ALLEN has been appointed manager of the Central Union Telephone Company at Bowling Green, Ohio, to take the place of J. J. Foeller, who goes to Toledo as chief clerk to the district superintendent, A. J. Mellen.

MR. CHARLES M. HURD of Pomeroy, Iowa, has been elected general manager of the Traeer Mutual Telephone Exchange Company of Traeer, Iowa. He will have charge of the company's exchanges at Gladbrook, Reinbeck and Traer.

MR. E. R. DICKERSON has been engaged as exchange manager of the Badger Telephone Company, of Oconomowoc, Wis. He will also have charge of all construction work of the company, which operates exchanges at Mapleton, North Lake and Thompson.

NEW COMPANIES.

INDIANAPOLIS, IND.—The Michigantown Co-Operative Telephone Company of Michigantown, has been incorporated with a capital stock of $3,000.

CLERMONT, IA.—The Gunder and Clermont Telephone Company of this place has been incorporated with a capital stock of $4,000. The officers are: President, H. S. Groth; vice-president, O. A. Olson; secretary-treasurer, G. L. Ostlie.

EST, KY.—The Est Telephone Company organized here recently by Felix Coldron and others with a capital stock of $2,000, will build and maintain Independent lines from Est to Harlam. Felix Coldron of this place is manager.

FARMINGTON, KY.—Farmington Telephone Company has been organized here with a capital of $5,000, fully paid in. The incorporators are, J. C. Shelton, J. J. Trumbo, and D. C. Turner. J. C. Shelton is manager.

FRANKFORT, KY.—One of the recent companies formed for building and operating a telephone system is the Sedalia Telephone Company of Sedalia. It has been incorporated with a capital of $5,000 by A. K. Jones, R. F. Jones and G. G. Carman, all of Sedalia.

LYNNVILLE, KY.—With a capital stock of $4,000, the Lynnville Telephone Company has been organized by B. B. Pryor, Henry Connor, and C. M. Richardson, all of Lynnville.

PILOT OAK, KY.—The Pilot Oak Telephone Company has just been organized and incorporated with a capital stock of $1,500. The incorporators are: J. A. Shelby, I. T. Howard and M. H. Eames, all of Pilot Oak.

DETROIT, MICH.—The Inter-County Telephone Company, with its office at Northville, has been incorporated with a capital stock of $5,000, all paid. The board of directors is composed of Clement C. Yerkes, Louis A. Babbitt, Robert C. Yerkes, Frank Thompson.

LANSING, MICH.—The Springvale Telephone Company of Springvale, has been incorporated with a capital stock of $1,800.

AITKIN, MINN.—The Aitkin Telephone Company has filed articles of incorporation. The capital stock is given at $24,000 and the incorporators are Herman Moork, F. M. Shook, both of Aitkin, and C. P. DeLaittre and J. L. DeLaittre of Minneapolis.

AUSTIN, MINN.—A meeting of the farmers in the Corning neighborhood was held recently to consider the telephone situation and it was decided to organize The Corning Co-operative Telephone Company. The directors elected were: Olaf Christianson, Sanford Christianson, Nels Listegard and Chris Christianson.

CROOKSTON, MINN.—The Russia-Fairfax Telephone Company has been organized by the farmers in those two townships and will be all ready for active construction operations early in the spring. The officers elected are as follows: President, B. Hinton; vice-president, Seivert Qualberg; secretary, O. Sanness; treasurer, E. Durdahl; directors, E. Durdahl, W. Benning and Carl Moe.

ST. PAUL, MINN.—Articles of incorporation have been filed by the Browns Valley Telephone Company of Browns Valley, Traverse county, with a capital stock of $50,000. The incorporators are: S. Y. Gordon, J. L. Paul, John Kierserling, Adam Ironsides, J. A. Malloy, E. L. Larson, A. B. Gillette, N. J. Brown, D. J. Leary of Browns Valley.

VALDA, MO.—A telephone company has been organized here with D. W. Stephens as president, Fred Meyer, treasurer and Milton Smith, secretary. The line will be erected at once.

EDDYVILLE, NEB.—The Eddyville Telephone Exchange Company has been chartered with a capital of $1,000 by P. G. Muchie, W. J. Lawson and others.

OMAHA, NEB.—The American Telephone and Telegraph Company of Nebraska has filed articles of incorporation with County Clerk Haverly, with a capital of $200,000. The purpose of the corporation is to operate country telephone exchanges. Charles H. Bangs is president, Charles D. M. Cole, vice-president; Melville Engleston, secretary; James C. Vail, treasurer; and Edgar M. Morseman, Jr., and Hal J. Ryner on the board of directors.

LITTLETON, N. H.—The Littleton Telephone Company, which was formed last fall has received its certificate of incorporation. The company is capitalized for $5,000, and the officers are: President, George A. Edson; vice-president, Frank P. Bond and Dr. M. F. Young; secretary, I. N. Lunderville.

ARTESIA, N. M.—The Artesia-Plains Telephone Company has been incorporated.

COOLEMEE, N. C.—The Coolemee Telephone Company formed to operate telephone and telegraph lines in Davie and Rowan counties, has filed articles of incorporation with a capital stock of $10,000. The incorporators are: J. M. Ledford, J. A. J. Rice and others.

FARGO, N. D.—The Kidder County Telephone Company of Steele has filed articles of incorporation. Its capital stock is $10,000 and the incorporators are: John B. Spangler and Mary F. Spangler, of Steele, and George B. Perham of Fargo.

FARGO, N. D.—With a capital stock of $10,000, the Sykeston and New Home Telephone Company of New Home has been incorporated. The incorporators are: C. C. Guenther, Dick Jensen, John Ran, and others of New Home, N. D.

GRAND FORKS, N. D.—The Parker Telephone Company of Inkster, which recently changed hands has been incorporated with a capital stock of $50,000. The incorporators are: M. L. Dryburgh, Angus Johnson, J. R. Barry, the last named of Inkster, and the first two of Medford.

BRIDGEPORT, OHIO.—A company has been organized for the purpose of building a telephone line from here to Oral. J. W. Bartlett is president; D. F. Charpening, secretary, and D. Q. Lawson, manager.

CINCINNATI, OHIO.—The Mt. Cory Farmers' Mutual Telephone Company of Mt. Cory has been incorporated by W. A. Williamson and others.

STERRETT, OKLA.—The Citizens of Sterrett have organized the Sterrett Exchange Telephone Company.

JASPER, ORE.—A new telephone company has been organized with Gainey Jacoby as president.

TALOGA, OKLA.—An Independent telephone company has been organized by citizens here to install and operate a local exchange with rural lines reaching throughout the county. Its capital stock of $5,000 is fully paid up. W. H. Hixon is president; Pearl Wilson secretary and M. A. Mixon treasurer.

VINITA, OKLA.—Mr. M. South of Miles and others are organizing a company to build a telephone line connecting Vinita and Centralia. It will be a party and toll line.

ALTOONA, PA.—The Homer's Gap Telephone Company has been formed in that section. Its officers are: President, John Smith; vice-president, George Moyer; secretary, Charles R. Foutz; treasurer, B. Mathers; directors, F. B. Cox, F. L. Black, S. T. Foutz.

ELIZABETH, Pa.—Farmers in this district have organized a farmers telephone company with the following officers: President, J. W. McKinney; vice-president, J. H. Christy; secretary, W. P. Caldwell; treasurer, A. F. Peairs; directors, the foregoing, along with S. W. McConnell and A. T. Cowan.

ABERDEEN, S. D.—Articles have also been filed for the Ardmore Telephone Company, at Ardmore, for the construction of

a line from Ardmore to Edgemont. It is capitalized at $3,750, and the incorporators are: James A. Bell, of Laurson; Charles S. Williams, Scott W. Hill, Jay F. Blessing, Ardmore; Chester L. Jensen, Hot Springs.

HOUSTON, TEX.—The Port Lavaca Telephone Company, of Port Lavaca, has filed articles of incorporation. Its capital stock is $20,000 and the incorporators are: W. C. Best, H. C. Innis and Willett Wilson.

MILWAUKEE, WIS.—The Midway Telephone Company of Deer Creek, Taylor county, was recently incorporated with a capital stock of $10,000. The incorporators are M. B. Bricke, Almer R. Erickson and D. F. Peterson.

MONTICELLO, WIS.—The farmers of Mt. Pleasant township, who are interested in building a telephone line east from this village, met recently and organized the Mt. Pleasant Farmers' Telephone Company. It was decided to start work upon the line at the earliest possible moment. The following officers were elected: President, Matt Marty; secretary, C. D. Kennedy; treasurer, Baltz Voegeli; trustees, J. H. Dowd, Oswald Zentner.

FINANCIAL.

URBANA, OHIO.—The Urbana Telephone Company has declared a semi-annual dividend of three per cent. and the affairs of the company are in fine condition.

BRIDGEPORT, W. VA.—The stockholders of the National Telephone Company at a recent meeting declared a four per cent. dividend. It will be payable quarterly, beginning February 1. Reports showed business to be on a firm basis.

MADISON, WIS.—The Eastern Wisconsin Telephone Company, Elkhart Lake, has filed an amendment increasing its capital stock from $15,000 to $25,000.

CONSTRUCTION.

GRAVETTTE, ARK.—Decatur Mutual Telephone Company of Decatur, six miles south, has built into this place. The Potter Telephone Company is making copper circuit connection with points northward, reaching Kansas City and other important points.

CHARLESTON, ILL.—The new switchboard and other new appliances which will soon be installed by the Coles County Telephone & Telegraph Company in the Charleston offices, have arrived in the city. The company is expending $10,000 to improve the local service.

MANLEY, ILL.—The Manley Telephone Company is repairing the line from Bushnell to Manley.

ROCKFORD, ILL.—The Rockford Home Telephone Company is arranging to run a line to Kirkland via Cherry Valley, giving almost direct connection, instead of retaining a service there via Caledonia, the present kind of connection maintained. Aside from this line others are being built in suburban districts of the county which is nearly covered entirely by the company. The Kirkland line gives better connection for Rockford via DeKalb, as it will run via Byron, Oregon and Rochelle.

PORTAGE PRAIRIE, IND.—The Home Telephone Company has built a toll line through this vicinity to Buchanan.

CHEROKEE, IA.—The New State Telephone Company is making extensive improvements throughout the Cherokee territory. It will in a short time have two more direct circuits to Cherokee from Sioux City. A through copper circuit into Sioux Falls and three direct copper circuits to Omaha, Neb., have just been completed. There has been a substantial increase at the Cherokee office and the company is getting ready to install a two-position toll board.

BELPRE, KAN.—The Belpre Telephone Company has decided to build two new lines south of town, thereby doing away with country switches.

LANSING, KAN.—Work on the installing of the People's Telephone Company's system will begin at once and will probably be completed inside of three months. If a suitable location for the exchange cannot be found the company will put up a building of its own.

EOLIA, KY.—The Upper Cumberland Telephone Company has connected with the Whitesburg Telephone Company's lines and announces that it will build new lines to connect with the East Tennessee Telephone Company at Appalachia, Va. Construction material will be needed. E. L. Creec is manager, Eolia.

LYNNVILLE, KY.—The recently organized Lynnville Telephone Company will construct lines from Lynnville via Sprucepine and French to Kiddville, a distance of 23 miles. B. B. Pryor is manager.

PILOT OAK, KY.—The Pilot Oak Telephone Company will construct and maintain lines in and around Pilot Oak, beginning construction at once. J. A. Shelby is manager of the company.

SEDALIA, KY.—The Sedalia Telephone Company, which was recently organized, will build Independent lines in Graves county, the construction work to be begun at once. A. K. Jones, of Sedalia, is manager.

YPSILANTI, MICH.—The Washtenaw Home Telephone Company has developed so greatly that the management finds it imperative to enlarge its plant, and the board of directors at a recent meeting authorized the expenditure of a considerable sum to take care of the necessary development incident to the large increase in subscribers recently secured. Under the new plan special attention will be given to the rural lines in the vicinity of Ypsilanti and already work has been started in this direction and several of the projected lines are under way.

ST. CLOUD, MINN.—The Lake George Telephone Company will extend its farmers' line to Elrosa.

BEATRICE, NEB.—The New Home Telephone Company is planning numerous extensions of its long distance lines to the south and east. A new copper circuit is to be built from Pawnee City through the southern part of Gage county to connect with the exchange at Fairbury.

WILBER, NEB.—The Saline Telephone Company is installing a new switchboard in its exchange.

DESMOIN, N. M.—The Clayton Texline Telephone Exchange, which was recently granted a franchise in this place, will install a switchboard here and build a metallic line to Clayton.

KENTON, N. M.—The Kenton Telephone Company is installing a new 100-line magneto switchboard in its new building, which was recently completed.

MALONE, N. Y.—At the annual meeting of the Home Telephone Company it was voted to establish the system in Chateaugay and to establish a toll line between Canton and Gouverneur to serve as a connecting link to Central New York. Chateaugay, which has heretofore had only a few telephones, will have a first-class system covering the entire village. The poles are up and the cable will be strung at once. The company has exchanges at Canton, Potsdam, Norwood, Malone, St. Regis Falls, Burke and Chateaugay.

NEW PHILADELPHIA, OHIO.—The Tuscarawas County Telephone Company has decided to make a number of improvements to its system and also to construct a number of county lines.

YORK, OHIO.—The board of directors of the York Telephone Company have arranged for the construction of a trunk line from Byhalia to York, Raymond, East Liberty and West Mansfield, making a distance of over thirty miles. All of these towns and also all intermediate points will have centrals and it is expected that every enterprising farmer in that section will be a user of the telephone service. As soon as the above towns are connected a trunk line will be built to Richwood and will, no doubt, connect with the Richwood Telephone Company.

WILKES-BARRE, PA.—At the recent annual meeting of the stockholders of the Consolidated Telephone Companies of Pennsylvania it was decided to spend about $200,000 on an automatic exchange in this city.

ARANSAS PASS, TEX.—It is reported that J. P. Gandy, of Supply, Okla., will install an Independent telephone system in Aransas Pass and vicinity.

ZION'S VIEW, PA.—The officers of the Rural Telephone Company have decided to materially extend the company's service.

BROOKELAND, TEX.—The Sabine Valley Telephone Company will put in a telephone exchange at Brookeland as soon as the poles and other materials can be sent here and the lines strung. It will be in complete operation in about sixty days. It also contemplates putting in a branch line to run from here to White City.

DALLAS, TEX.—A new switchboard will probably be purchased by the Farmers' Telephone Company.

ST. JOHNSBURY, VT.—The Citizens Telephone & Telegraph Exchange Company will install a new switchboard in the local exchange.

LUCK, WIS.—At the annual meeting of the stockholders of the Equity Telephone Company it was decided to install a new switchboard.

MAPLETON, WIS.—The Badger Telephone Company has erected a concrete building for its exchange in this place.

PILSEN, WIS.—Several of the farmers in this vicinity have decided to erect a private telephone system in the spring or as soon as weather permits. The promoters are John Kozlek, John Jirsa, Jos. Kulhanek and M. J. Suess.

RICHMOND, WIS.—The Richmond Telephone Company is extending its line farther east and north.

SUTTON, ONT., CAN.—Dr. Greenwood will at once build a telephone line from here to Ravenshoe.

ELECTIONS.

LANARK, ILL.—The directors of the Lanark Mutual Telephone Company met recently and organized for the coming year. Following are the officers: President, George W. Nichol; vice-president, D. H. Stitzel; treasurer, W. A. Durr; general manager, D. D. Stitzel; secretary and assistant manager, Boyd Zuck.

PONTIAC, ILL.—At a meeting of the directors of the Graymont Telephone Company the following officers were elected: President, Thomas Cavanaugh; secretary, A. A. Burckey; treasurer, John Richardson.

WATERLOO, ILL.—At the annual stockholders' meeting of the Harrisonville Telephone Company, the following officers were elected: President, Jacob Oldendorph; vice-president, E. Schoening; secretary-treasurer, D. M. Hardy. Directors, Charles Liebheit, Herman Quernheim.

BLUFFTON, IND.—The stockholders of the United Telephone Company at a recent meeting elected the following directors: A. G. Lupton, of Hartford City; John Sale, of Ft. Wayne; L. C. Davenport and J. W. Sale, of Bluffton; L. G. Richardson, W. B. Cooley and Hugh Daugherty, of Indianapolis.

ORESTES, IND.—The Orestes Telephone Company has selected the following officers for the coming year: President, William Hanger; vice-president, Benjamin Fesler; secretary, S. McDermitt; treasurer, Allen Peters.

BEAN RIDGE, IA.—At the regular annual meeting of the South Ottumwa Farmers' Mutual Telephone Company, the following officers were elected: President, Leonard Nelson; vice-president, Elmer Eddy; secretary, Lymas Cohagen; treasurer, E. G. Harsch. Directors: Geo. Yahn, Jas. Randall and Joe Hill.

GRISWOLD, IA.—The annual election of officers of the Farmers' Mutual Telephone Company resulted as follows: President, A. Lischer; vice-president, James Boller; secretary, Ira L. Welch; treasurer, J. R. Putnam. Directors: James Boller, J. R. Putnam, Cyrus Boller, Dick Townsend, Ira L. Welch, L. D. Meredith, Wm. Mauk, A. Lischer, N. R. Graham, Isaac Spiker, J. F. Conklin.

GENESEO, KAN.—The following directors have been elected by the stockholders of the Geneseo Telephone Company; J. S. Gibson, G. E. Bush, R. R. Newkirk, John Berwick, F. H. Norris, L. H. Williams, S. A. Crihfield, Olney Monroe and A. W. Crosby. The officers are: President, A. W. Crosby; vice-president, R. R. Newkirk; secretary, G. E. Bush; treasurer, J. S. Gibson. Executive committee: A. W. Crosby, G. E. Bush and J. S. Gibson, manager, A. W. Crosby, chairman of directors, R. R. Newkirk.

NEW LANCASTER, KAN.—The annual meeting of the New Lancaster Farmers' Mutual Telephone Company was held recently and C. F. Tracy was chosen president for the ensuing year; O. H. Ewan, vice-president; F. B. Conner, secretary; J. R. Lemon, treasurer, and Louis Jones, director.

MONTEVIDEO, MINN.—C. A. Sherdahl has been re-elected president of the Citizens' Telephone Exchange; Harry Levoy, vice-president, and F. E. Bentley, secretary-manager.

SEDAN, MINN.—The stockholders of the Sedan Telephone Company at their annual meeting elected the following officers for the ensuing year: T. S. Gannon, president; A. N. Butler, vice-president; W. E. Martin, secretary; R. C. Curry, treasurer, and Gust Anderson, of Terrace, and M. C. Whitney, of Grove Lake, managers.

DILLON, MONT.—The officers of the Southern Montana Telephone Company for the current year are: Leonard Eliel, president; A. L. Stone, vice-president; F. A. Hazelbaker, secretary, treasurer and general manager. Executive committee: B. F. White, W. A. Jones and F. A. Hazelbaker; board of directors: Leonard Eliel, B. F. White, W. A. Jones, A. L. Stone, W. M. Knapp, John F Bishop, C. H. Strowbridge, Fidel Huber and F. A. Hazelbaker.

DESHLER, NEB.—At the annual meeting of the Deshler Telephone Company officers were elected as follows: A. Caughey, president; W. E. Philby, secretary; G. Schmidt, vice-president; G. W. Barthel, treasurer These and John Albrecht constitute the directors.

KEARNEY, NEB.—The recently elected directors of the Buffalo County Telephone Company are: P. Holtzanger, T. L. Grammar and A. H. Valentine, all of Pleasanton.

VALLEY, NEB.—At the annual meeting of the stockholders of the Douglas County Telephone Company, the manager's report showed a large increase in the number of telephones and many other substantial improvements. The officers elected for the coming year are: J. C. Robinson, president; Frank Reichardt, vice-president; W. E. Weekly, secretary; Morris Johnson, treasurer; L. P. Byars, general manager.

BOQUET, N. Y.—The Boquet Mutual Telephone Company has elected the following officers: President, F. C. Bigelow; secretary-treasurer, C. C. Stafford; directors, W. W. Richards, Bert Cook, A. Flack.

MALONE, N. Y.—The following officers and directors have been named by the stockholders of the Home Telephone Company for the ensuing year: President, N. M. Marshall; vice-president, I. H. Griswold; treasurer, J. R. Weston; secretary, J. H. Coughtry; directors, N. M. Marshall, C. W. Breed, of Malone; E. M. Perkins, J. R. Weston, R. L. Sisson, of Potsdam; S. B. Benjamin, Stockholm; John Bird, W. D. Manley, Canton; C. S. Olmstead, Nicholville; J. H. Coughtry, H. Hendrickson, E. M. Woodward, I. H. Griswold, T. M. Brush, Albany; E. L. Grauel, Troy.

BARNESVILLE, OHIO.—The stockholders of the Belmont Telephone Company have elected the following board of directors: J. A. Howard, W. C. Handlan, Alex. Neff, C. L. Weems, James McNiece, J. W. Doudna and Fred Neining.

JACKSON, OHIO.—The directors and officers of the Jackson County Home Telephone Company were elected at a recent meeting of the stockholders. The following directors were elected: Ira Sternberger, H. S. Willard, O. B. Ervin, M. L. Sternberger, Jr., E. L. Sternberger, John M. Wright and E. E. Eubanks The officers are as follows: Ira Sternberger, president; H S. Willard, first vice-president; E. L. Sternberger, second vice-president; E. E. Eubanks, secretary-treasurer.

OXFORD, OHIO.—At the annual meeting of the Bloomingville Telephone Association the following officers were elected: President, Dr. M. J. Love; vice-president, George Rogers; manager, F. P. Schnee; secretary, C. W. Ramsdell; treasurer, J. N. Hoffman.

ALLENTOWN, PA.—The annual meeting of the stockholders of the Consolidated Telephone Companies of Pennsylvania was held recently, when these directors were elected: Judge Ellis L. Orvis, Bellefonte; F. D. Houck, Harrisburg; Charles West, Allentown; S. R. Caldwell, Harrisburg, and N. E. Robb, Harrisburg.

JOHNSTOWN, PA.—The stockholders of the Johnstown Telephone Company have elected directors as follows: Charles Griffith, P. F. McAneny, H. H. Weaves, Dr. J. B. Lowman, J. P. Thomas, P. F. Fisher, W F. Murdock, Isaac Marx and George W. Swank.

PHILADELPHIA, PA.—At the annual meeting of the stockholders of the Egg Harbor City Telephone Company the following officers and directors were elected: President, Samuel Winterbottom; secretary, H. C. Schlichting; treasurer, Lorenz Krein; directors, Theo. Messinger, Jacob Wimberg, Thos. T. Mather and Wm. G. Stroetmann.

WEST LEESPORT, PA.—The Leesport Rural Telephone Company has elected the following board of directors: J. S. Parvin, Samuel H. Lenhart, Dr. H. U. Miller, Dr. C. O. Collins, Dr. F. P. Dundore, Frank B. Brown, Harry B. Adams, Charles M. Balthaser, Merkel M. Rahn and John J. Hafer. The directors reorganized by electing these officers: President, Frank B. Brown; vice-president, Charles M. Balthaser; treasurer, J. S. Parvin; secretary, Dr. H. U. Miller; assistant secretary, Harry B. Adams.

GEORGETOWN, S. C.—The following officers were elected at the annual meeting of the Home Telephone Company: W. T. Turbeville, president and general manager; R. C. Snipes, vice-president; R. M. Barnes, secretary and treasurer.

MILBANK, S. D.—At a meeting of the board of directors of the Grant County Telephone Company were elected John Heffernan, president; C. Pew, vice-president; H. Cunningham, secretary, and John Nord, treasurer. James Street resigned as a member of the board and W. G. Ackerman was elected in his place.

PARKERSBURG, W. VA.—At the annual meeting of the stockholders of the West Virginia Western Telephone Company the old board of directors was re-elected as follows: J. H. Lininger, of Harrisville; A. C. Davis, of Parkersburg; J. E. Carle, of Eatons; B. S. Pope, of Parkersburg; R. H. Rutherford, of Zanesville, O; R. H. Browse, of Grape Island, W. Va.; H. G. Feller, of St. Marys; C. T. Hiteshew and G. D. Jeffers, of Parkersburg; I. P. Sharp, of Waverly; A. L. Gracy, of Marietta, O. At a meeting of the board of directors the old officers were re-elected. They are: President, J. H. Lininger, of Harrisville; vice-president, J. E. Carle, of Eatons; secretary-treasurer, C. T. Hiteshew; general manager, A. C. Davis.

GRAND RAPIDS, WIS.—At the annual meeting of the Wood County Telephone Company the following officers were elected: President, W. A. Drumb; vice-president, H. E. Fitch; secretary, M. H. Jackson.

OAKFIELD, WIS.—At the annual meeting of the Oakfield Telephone Company the following officers were elected: President, S. Edwards; vice-president, J. H. Bierne; secretary, W. E. Bristol; treasurer, C. H. Moore; manager, T. E. Worthing; J. H. Bierne, J. J. Burns and C. H. Moore were re-elected directors for a term of three years.

HAMILTON, CAN.—The officers recently eelcted by the Barton & Binbrook Telephone Company are: President, T. S. Fletcher; vice-president, J. L. Fletcher, and T. E. Tidey, secretary-treasurer.

MISCELLANEOUS.

LAVONIA, GA.—The Lavonia Telephone Company was recently purchased by Arad B. Vickery.

McINTOSH, MINN.—The local telephone exchange at McIntosh has been purchased by the Garden Valley Co-operative Telephone Company. The Garden Valley company contemplate material improvements and extending the lines into the country.

COLUMBUS, OHIO.—A number of Columbus men attended the annual meeting of the Home Telephone Company of Dayton at that place Wednesday, February 10. The Dayton company is one of the large growing Independents of the state. E. R. Sharp and Frank A. Davis, of the Columbus Citizens' Telephone Company, are on the board of directors of the Home company.

INDEPENDENCE, PA.—Recently the lines of the Chartiers Telephone Company, of this section, and all the switchboards of this place, West Middletown, Avella and Bethany were sold to Claud Wyant, of the Home Telephone Company of Wellsburg.

VANCOUVER, WASH.—H. S. Parker has purchased the telephone system of Camas, and has been granted a 35 year franchises by the town council. He contemplates making numerous changes and greatly improving the system.

CUMBERLAND, WIS.—Farmers in this vicinity are organizing a rural telephone company. An effort was made to get into connection with the Cumberland Telephone Company, but it failed. The city of Cumberland has an ordinance prohibiting the setting of more poles in its streets and the new farmers' company proposes to set its line on property of people who are friendly to it.

UNDERGROUND.

DULUTH, MINN.—The Duluth Telephone Company will expend about $100,000 in this city in putting its wires underground during the present year.

TORONTO, ONT., CAN.—Within a month the city will call for tenders for the conduit work necessary for the laying of underground wires for the electrical distributing plant.